

Land Use Assumptions, Infrastructure Improvements Plan, and Development Impact Fees

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City of Glendale, Arizona

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EXECUTIVE SUMMARY

Arizona's enabling legislation for development fees (ARS 9-463.05) calls for three integrated products: 1) Land Use Assumptions for at least 10 years (found in Appendix C), 2) Infrastructure Improvements Plan (abbreviated IIP and contained within each public facility section of this report), and 3) Development Fees (proposed amounts summarized below and discussed in detail in each public facility section). All three products are contained in this document, but the State now requires a two-phase adoption process. The land use assumptions and IIP will be reviewed, refined, and approved before focusing on the development fees.

In contrast to many General Plans and Master Plans for specific types of infrastructure, the IIP is limited to 10 years. Another important change in the legislation is the requirement that fees be based on the same Level-Of-Service (LOS) provided to existing development. LOS may increase, but not by means of development fees. A final highlight of the enabling legislation is specific limitations on necessary public services. For example, only 10,000 square feet of a new library may be funded with development fees.

Glendale's IIP and proposed development fees includes the necessary public services listed below. Glendale currently collects a development fee for library facilities but the recommendation of City staff is to suspend collection when the updated fees become effective (approximately August 1, 2014). Additional background and the reasoning behind this recommendation are discussed in the main body of this report.

- Parks and Recreational Facilities
- Streets
- Police Facilities
- Fire Facilities
- Water Facilities
- Wastewater Facilities

Development fees are one-time payments used to construct system improvements needed to accommodate new development. The fee represents future development's proportionate share of infrastructure capacity. Development fees may only be used for capital improvements or debt service for growth-related infrastructure. In contrast to general taxes, development fees may not be used for operations, maintenance, replacement or correcting existing deficiencies.

Arizona Development Fee Enabling Legislation

Arizona Revised Statutes 9-463.05 governs how development fees are calculated for municipalities in Arizona. During the state legislative session of 2011, Senate Bill 1525 was introduced which significantly amended the development fee enabling legislation. The changes included:

- Amending existing development fee programs by January 1, 2012.
- Abandoning existing development fee programs by August 1, 2014.
- New development fee program structure requiring around Land Use Assumptions and Infrastructure Improvements Plan.
- New adoption procedures for the Land Use Assumptions, Infrastructure Improvements Plan, and development fees.
- New definitions, including "necessary public services" which defines what categories and types of infrastructure may be funded with development fees.
- Time limitations in development fee collections and expenditures.
- New requirements for credits, "grandfathering" rules, and refunds.

As documented in this report, the City of Glendale has complied with Arizona's development fee enabling legislation and applicable legal precedents. Development fees are proportionate and reasonably related to the capital improvement demands of new development. Specific costs have been identified using local data and current dollars. With input from City staff, TischlerBise determined demand indicators for each type of infrastructure and calculated proportionate share factors to allocate costs by type of development. This report documents the formulas and input variables used to calculate the development fees for each type of public facility. Development fee methodologies also identify the extent to which new development is entitled to various types of credits to avoid potential double payment of growth-related capital costs.

Necessary Public Services

Under the new requirements of the development fee enabling legislation, development fees may be only used for construction, acquisition or expansion of public facilities that are necessary public services. "Necessary public service" means any of the following categories of facilities that have a life expectancy of three or more years and that are owned and operated on behalf of the municipality:

- Water Facilities
- Wastewater Facilities
- Storm Water, Drainage, and Flood Control Facilities
- Library Facilities
- Streets Facilities
- Fire and Police Facilities
- Neighborhood Parks and Recreational Facilities
- Any facility that was financed before June 1, 2011 and that meets the following requirements:
 1. Development fees were pledged to repay debt service obligations related to the construction of the facility.
 2. After August 1, 2014, any development fees collected are used solely for the payment of principal and interest on the portion of the bonds, notes, or other debt service obligations issued before June 1, 2011 to finance construction of the facility.

Infrastructure Improvements Plan

Development fees must be calculated pursuant to an Infrastructure Improvements Plan. For each necessary public service that is the subject of a development fee, the IIP shall include:

- *A description of the existing necessary public services in the service area and the cost to update, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed on this state, as applicable.*
- *An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.*
- *A description of all or the parts of the necessary public services or facility expansion and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in the state, as applicable.*
- *A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility*

expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.

- *The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.*
- *The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.*
- *A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions and a plan to include these contributions in determining the extent of the burden imposed by the development, as required in subsection B.12 (i.e. requirements for development fees) and quoted in the following discussion of offsets.*

Evaluation of Credits

New development should not be required to pay twice for the cost of new facilities – once through development fees and again through other taxes or fees that are used to fund the same facilities. To avoid such potential double-payment, development fees may be reduced, and such a reduction is referred to as an offset or revenue credit that is incorporated into the development fee calculation. While this has long been a part of development fee practice, Arizona's enabling legislation added the following provision (ARS 9-463.05.B.12):

The municipality shall forecast the contribution to be made in the future in cash or by taxes, fees, assessments or other sources of revenue derived from the property owner towards the capital costs of the necessary public service covered by the development fee and shall include these contributions in determining the extent of the burden imposed by the development. Beginning August 1, 2014, for purposes of calculating the required offset to development fees pursuant to this subsection, if a municipality imposes a construction contracting or similar excise tax rate in excess of the percentage amount of the transaction privilege tax rate imposed on the majority of other transaction privilege tax classifications, the entire excess portion of the construction contracting or similar excise tax shall be treated as a contribution to the capital costs of necessary public services provided to development for which development fees are assessed, unless the excess portion was already taken into account for such purpose pursuant to this subsection.

In general, revenue credits and offsets are only required for funding that is dedicated for capacity-expanding improvements of the type addressed by the development fee. Finally, Arizona's enabling legislation now requires municipalities to provide offsets for the excess portion of any construction contracting excise tax.

Qualified Professionals

Qualified professionals must prepare the IIP, using general accepted engineering and planning practices. A qualified professional is defined as "a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person's license, education, or experience." TischlerBise is a fiscal, economic, and planning consulting firm specializing in the cost of growth services. Our services include development fees, fiscal impact analysis, infrastructure funding, user fee and cost of service

studies, capital improvement plans, and fiscal software. TischlerBise has prepared over 800 development fee studies over the past 30 years for local governments across the United States.

Proposed Development Fees in Glendale

In contrast to project-level improvements, development fees fund growth-related infrastructure that will benefit multiple development projects, or the entire jurisdiction (usually referred to as system improvements). There are three general methods for calculating development fees. The choice of a particular method depends primarily on the timing of infrastructure construction (past, concurrent, or future) and service characteristics of the facility type being addressed. Each method has advantages and disadvantages in a particular situation, and can be used simultaneously for different cost components.

Reduced to its simplest terms, the process of calculating development fees involves two main steps: (1) determining the cost of development-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, the calculation of development fees can be quite complicated because of the many variables involved in defining the relationship between development and the need for facilities within the designated service area. The following paragraphs discuss three basic methods for calculating development fees and how those methods can be applied.

- The rationale for recoupment, often called cost recovery, is that new development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which new growth will benefit. This methodology is often used for utility systems that must provide adequate capacity before new development can take place.
- The incremental expansion method documents current level-of-service (LOS) standards for each type of public facility, using both quantitative and qualitative measures. By definition there are no existing infrastructure deficiencies or surplus capacity in infrastructure. New development is only paying its proportionate share to maintain current standards for growth-related infrastructure. Fee revenue will be used to expand or provide additional facilities, as needed to keep pace with new development.
- The plan-based method allocates costs of future improvements to projected service units. Improvements are typically identified in a facility master plan and development potential is identified by the land use assumptions. There are two options for determining the cost per service unit: 1) total cost of a public facility can be divided by total demand units (average cost approach), or 2) the growth-share of the public facility cost can be divided by the net increase in demand units over the planning timeframe (marginal cost approach).

Figure 1 summarizes the methods and cost components for each type of infrastructure included in Glendale's IIP. The table below also indicates the service areas applicable to each type of infrastructure. Proposed service areas are mapped in Figure 2.

Figure 1 – Development Fee Methods and Cost Components

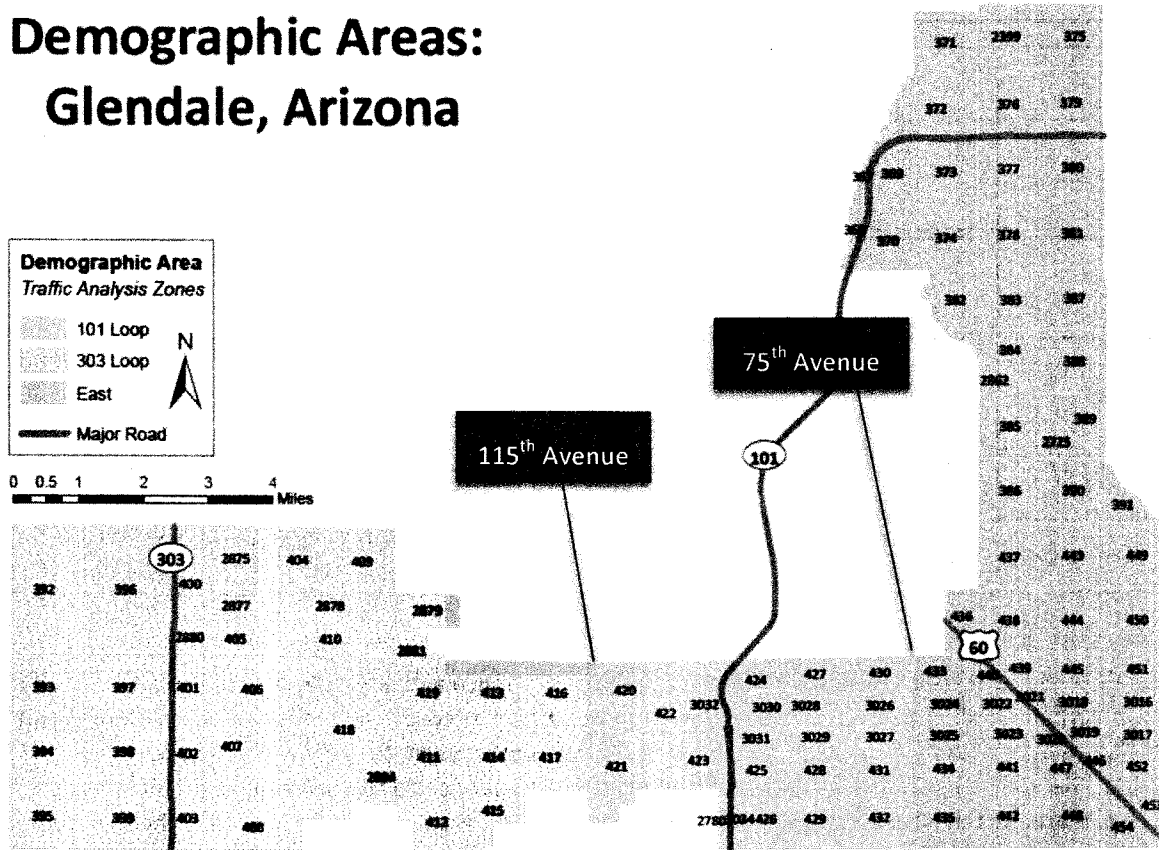
Type of Fee	Cost Recovery (past)	Incremental Expansion (present)	Plan-Based (future)	Service Areas
1. Parks & Recreation		Mid-size Parks and Trails		East and West 101 (combined)
2. Streets			Lane Miles of Arterials & Intersection Improvements	East, West 101, and West 303 (each separate)
3. Police		Vehicles & Equipment		East, West 101, and West 303 (combined)
4. Fire		Fire Stations & Apparatus		East, West 101, and West 303 (combined)
5. Water	Surface Water Treatment		Surface Water Supply and Major Lines	East and West 101 (combined)
6. Wastewater	Treatment Plants		Wastewater Collection System	East and West 101 (combined)

Arizona's enabling legislation requires a determination of service areas, within which a substantial nexus exists between public facilities and the development being served. In Glendale, three demographic areas (shown in Figure 2) provide the basic building blocks used to define the service areas. For example, Glendale does not provide water and wastewater service to the area west of 115th Avenue, so the service area for utilities is East Glendale and the West 101 area. Street facilities are the only type of infrastructure that has three service areas and unique fees for each.

Given the expectation that Glendale will not annex significant residential development west of 115th Avenue within the next five years, residential development in the West 303 area was excluded from the service area and infrastructure improvements plans for all public facilities. Nonresidential development in the West 303 area will be annexed and will pay development fees for streets, police, and fire facilities.

Figure 2 – Demographic Areas for Land Use and Infrastructure Analysis

Demographic Areas: Glendale, Arizona



Prepared for Glendale, Arizona by TischlerBise

Non-utility fees for residential development are summarized in Figure 3, including current and proposed fees for each type of infrastructure. Glendale currently collects a library development fee of \$398 per single-family dwelling and \$314 per multi-family dwelling, but will recommend suspension of this fee when the updated fees become effective in August 2014. The proposed fees vary by three geographic areas. Appendix C provides demographic data and development projections for the three areas.

Figure 3 – Current and Proposed Non-Utility Fees for Residential Development

Residential Per Dwelling Unit in East Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Single Unit	\$625	\$909	\$694	\$1,551	\$252	\$339	\$317	\$1,146	\$1,888	\$3,945	\$2,057
2+ Units per Structure	\$492	\$517	\$408	\$865	\$199	\$193	\$250	\$652	\$1,349	\$2,227	\$878
Residential Per Dwelling Unit in West 101 Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Single Unit	\$625	\$909	\$694	\$3,522	\$252	\$339	\$317	\$1,146	\$1,888	\$5,916	\$4,028
2+ Units per Structure	\$492	\$517	\$408	\$1,963	\$199	\$193	\$250	\$652	\$1,349	\$3,325	\$1,976
Residential Per Dwelling Unit in West 303 Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Single Unit	\$625	*	\$694	*	\$252	*	\$317	*	\$1,888	*	(\$1,888)
2+ Units per Structure	\$492	*	\$408	*	\$199	*	\$250	*	\$1,349	*	(\$1,349)

* Excluded from service area. Glendale anticipates no significant annexation of residential development over the next five years in the West 303 area.

Fees for nonresidential development, per thousand square feet of floor area, are summarized in Figure 4. There are fee schedules for three geographic areas. The proposed fees decrease for all types of nonresidential development in East Glendale, except office & other services. In the West 101 and 303 areas, proposed nonresidential fees increase for all types of development.

Figure 4 – Current and Proposed Non-Utility Fees for Nonresidential Development

Nonresidential per Thousand Square Feet of Floor Area in East Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Industrial	\$0	\$23	\$415	\$308	\$58	\$12	\$115	\$129	\$588	\$472	(\$116)
Commercial	\$0	\$43	\$2,156	\$2,210	\$304	\$99	\$200	\$239	\$2,660	\$2,591	(\$69)
Institutional	\$0	\$30	\$1,034	\$883	\$146	\$36	\$302	\$166	\$1,482	\$1,115	(\$367)
Office & Other Services	\$0	\$101	\$1,034	\$957	\$146	\$39	\$302	\$563	\$1,482	\$1,660	\$178
Nonresidential per Thousand Square Feet of Floor Area in West 101 Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Industrial	\$0	\$23	\$415	\$701	\$58	\$12	\$115	\$129	\$588	\$865	\$277
Commercial	\$0	\$43	\$2,156	\$5,017	\$304	\$99	\$200	\$239	\$2,660	\$5,398	\$2,738
Institutional	\$0	\$30	\$1,034	\$2,005	\$146	\$36	\$302	\$166	\$1,482	\$2,237	\$755
Office & Other Services	\$0	\$101	\$1,034	\$2,172	\$146	\$39	\$302	\$563	\$1,482	\$2,875	\$1,393
Nonresidential per Thousand Square Feet of Floor Area in West 303 Glendale											
Type	Parks and Recreation		Streets		Police		Fire		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	
Industrial	\$0	\$0	\$415	\$1,154	\$58	\$12	\$115	\$129	\$588	\$1,295	\$707
Commercial	\$0	\$0	\$2,156	\$8,260	\$304	\$99	\$200	\$239	\$2,660	\$8,598	\$5,938
Institutional	\$0	\$0	\$1,034	\$3,301	\$146	\$36	\$302	\$166	\$1,482	\$3,503	\$2,021
Office & Other Services	\$0	\$0	\$1,034	\$3,575	\$146	\$39	\$302	\$563	\$1,482	\$4,177	\$2,695

Current and proposed development fees for water and wastewater facilities are summarized in Figure 5. In combination, the proposed water and sewer fees for Glendale are 18-21 percent higher, with most of the increase attributable to wastewater facilities.

Figure 5 – Current and Proposed Fees for Utilities

All Development Types (per meter) in East and West 101 Glendale							
Meter Size (inches)	Water		Wastewater		TOTAL		Increase/ (Decrease)
	Current	Proposed	Current	Proposed	Current	Proposed	
0.75	\$3,420	\$2,761	\$480	\$1,944	\$3,900	\$4,705	\$805
1.00	\$5,820	\$4,607	\$820	\$3,243	\$6,640	\$7,850	\$1,210
1.50	\$11,290	\$9,183	\$1,590	\$6,462	\$12,880	\$15,645	\$2,765
2.00	\$18,130	\$14,695	\$2,550	\$10,341	\$20,680	\$25,036	\$4,356

To obtain the total development fee for a single residential unit, utility fees (shown in Figure 5) must be added to the non-utility fees (shown in Figure 3). Assuming a 0.75-inch meter for a single residential unit, current and proposed total development fees, by geographic area, are shown in Figure 6. Proposed fees for residential development are lower in East Glendale due to lower costs of planned improvements for street facilities.

Because Glendale anticipates no significant annexation of residential development over the next five years in the West 303 area, residential development west of 115th Avenue is excluded from the development fee service area. If residential parcels are annexed in the West 303 area, the need for public facilities may be addressed through annexation and development agreements.

Figure 6 – Current and Proposed Total Fees for a Single Residential Unit by Area

Total Fees for Single Unit Residential (assumes 0.75-inch meter)

Area	Current	Proposed	\$ Change	% Change
East Glendale	\$5,788	\$8,650	\$2,862	49%
West 101 Glendale	\$5,788	\$10,621	\$4,833	84%
West 303 Glendale*	\$1,888	\$0	(\$1,888)	-100%

* Excluded from current utility service area and proposed service area for all fees.

Glendale anticipates no significant annexation of residential development over the next five years in the West 303 area.

PARKS AND RECREATIONAL FACILITIES IIP

ARS 9-463.05.T.7 (g) defines the facilities and assets which can be included in the Parks and Recreation Facilities IIP.

"Neighborhood parks and recreational facilities on real property up to thirty acres in area, or parks and recreational facilities larger than thirty acres if the facilities provide a direct benefit to the development. Park and recreational facilities do not include vehicles, equipment or that portion of any facility that is used for amusement parks, aquariums, aquatic centers, auditoriums, arenas, arts and cultural facilities, bandstand and orchestra facilities, bathhouses, boathouses, clubhouses, community centers greater than three thousand square feet in floor area, environmental education centers, equestrian facilities, golf course facilities, greenhouses, lakes, museums, theme parks, water reclamation or riparian areas, wetlands, zoo facilities or similar recreational facilities, but may include swimming pools."

The infrastructure improvements plan includes components for parks and trails. The City has documented existing infrastructure standards and will use an incremental expansion cost method, with development fees maintaining existing standards over time. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City's comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Parks and Recreation Service Area

Over the next five years, Glendale will have one service areas for parks and recreation development fees that combines the East and West 101 demographic areas, discussed further in the land use assumptions (see Appendix C). Given the expectation that Glendale will not annex significant residential development in the far west portion of the Municipal Planning Area (MPA), the West 303 demographic area is excluded from the parks and recreation service area.

Proportionate Share for Parks and Recreation Facilities

ARS 9-463.05.B.3 requires development fees to not exceed a proportionate share of the cost of necessary public services needed to serve new development. As shown in Figure PR1, TischlerBise recommends daytime population as a reasonable indicator of the potential demand for parks and recreational facilities, from both residential and nonresidential development. According to MAG employment data, 87% of Glendale jobs in 2011 are in the East and West 101 areas. TischlerBise applied this percentage to the 2011 estimate of citywide inflow commuters (shown in Figure P1). The proportionate share is based on cumulative impact days per year, with the number of residents potentially impacting parks and recreation facilities 365 days per year. Inflow commuters potentially impact parks and recreation facilities 200 days per year, assuming 4 workdays per week multiplied by 50 weeks a year. For parks and recreational facilities, the cost allocation is 90% for residential development and 10% for nonresidential development.

Figure PR1 – Daytime Population

Daytime Population in 2011			Cumulative Impact Days per Year			Cost Allocation for	
Jurisdiction	Residents	Inflow Commuters*	Residential**	Nonresidential***	Total	Residential	Nonresidential
Glendale	230,482	49,111	84,125,930	9,822,289	93,948,219	90%	10%

* (jobs in East and West 101 Glendale, less 10% public sector jobs) multiplied by percentage of non-resident workers

** Days per Year = 365

200 *** 4 Days per Week x 50 Weeks per Year

Existing Parks and Standards

As specified in ARS 9-463.05.B.4, development fees in Glendale are based on the same level of service provided to existing development. Figure PR2 inventories existing parks in Glendale that are roughly the same size as future parks that will be funded with development fees. Consistent with Arizona's enabling legislation, large regional parks are excluded from development fees. Also, TischlerBise recommends that Glendale exclude small parks (less than 10 acres) that might not provide a substantial nexus to the entire service area. By eliminating smaller parks, Glendale will no longer have to track collection and expenditure of park fees by sub-areas of the City. Because small parks are project-level improvements (i.e. not a system improvement to be funded by development fees), Glendale may require small parks as a condition of development approval. The average size of the parks listed below is 15.9 acres.

For residential development, Glendale will use resident population to derive current infrastructure standards for parks. Glendale has provided 0.6 acres of mid-size parks for every thousand persons (0.0006 acres per person) in the parks and recreation service area (i.e. East & West 101 demographic areas). The existing standard for nonresidential development is 0.2 acres for every thousand jobs.

TischlerBise compiled cost factors for parks in Maricopa, Buckeye, Goodyear, and Peoria that average \$294,000 per acre for both land and improvements. Based on development fee studies in other jurisdictions, TischlerBise recommends a cost allocation of \$100,000 per acre for land and \$194,000 per acre for park improvements. To maintain current infrastructure standards for parks, Glendale needs to spend \$240.61 for each additional resident and \$21.82 for each additional job.

Figure PR2 – Glendale Parks Inventory

<u>Park Name</u>	<u>Acreage</u>	* According to the Arizona enabling legislation, parks up to 30 acres are necessary and Glendale may include larger parks that provide direct benefit to new development.
1 Foothills	43.0	
2 Paseo Racquet Center	22.0	
3 Rose Lane	19.0	
4 Chapparral	12.0	
5 Northern Horizon	12.0	
6 O'Neil	11.0	
7 79th & Orangewood Vista	10.0	
8 Bonsall North	10.0	
9 Hidden Meadows	10.0	
10 Sunset Ridge	10.0	
TOTAL	159.0	
Average Acres per Park	15.9	

Allocation Factors for Park Improvements

Improvements Cost per Acre	\$194,000
Improvements Cost per Average Size Park	\$3,080,000
Land Cost per Acre	\$100,000
Residential Proportionate Share	90%
Nonresidential Proportionate Share	10%
Glendale East & West 101 Residents in 2013	222,749
Glendale East and West 101 Jobs in 2013	72,963

Infrastructure Standards for Park Improvements

	<u>Improved Acres</u>	<u>Improvements and Land Cost</u>
Residential (per person)	0.0006	\$240.61
Nonresidential (per job)	0.0002	\$21.82

Future Need for Parks

Arizona's development fee enabling legislation requires jurisdictions to convert land use assumptions into service units and the corresponding need for additional infrastructure over the next ten years. As shown in Figure PR3, projected population and jobs drive the needs analysis for parks. To maintain current standards in the service area, Glendale will need approximately 15.2 acres of improved mid-size parks over the next ten years. The ten-year, growth-related capital cost for parks (land plus improvements) is approximately \$4.47 million.

Figure PR3 – Parks Needed to Accommodate Growth

		Park Needs		
	Year	Glendale East & West 101 Residents	Glendale East and West 101 Jobs	Park Acres
Base	2013	222,749	72,963	159.0
Year 1	2014	223,971	74,570	160.1
Year 2	2015	225,212	76,254	161.3
Year 3	2016	226,473	78,022	162.5
Year 4	2017	227,753	79,881	163.7
Year 5	2018	229,051	81,840	165.0
Year 6	2019	230,370	83,906	166.3
Year 7	2020	231,711	86,089	167.6
Year 8	2021	234,299	88,400	169.8
Year 9	2022	236,888	90,850	172.0
Year 10	2023	239,476	93,452	174.2
Ten-Yr Increase		16,727	20,488	15.2
Growth-Related Need for Park Land plus Improvements => \$4,472,000				

Needs Analysis for Trails

Figure PR4 inventories existing trails in Glendale and documents current infrastructure standards. Existing trails are primarily located in linear parks, along irrigation canals, and in drainage areas that are dry for most of the year. Glendale has provided 0.87 linear feet of trails for every resident in the service area and 0.30 linear feet for every job. Staff provided the trail cost factors, with a weighted average of \$85 per linear foot for both paved and natural surfaces. To maintain current infrastructure standards for trails, Glendale needs to spend \$94.69 for each additional resident and \$8.59 for each additional job.

As shown at the bottom of the table below, projected population and jobs drive the needs analysis for trails. To maintain current standards, Glendale will need approximately 20,500 linear feet of trails over the next ten years. The ten-year, growth-related capital cost for trails is approximately \$1.76 million. Although specific locations have not been identified, potential locations include the West Valley Rivers Project (Agua Fria Watercourse Master Plan and the New River Multi-Modal Corridor Study), which would place one section of trail near Litchfield Road to the Agua Fria and the other along New River north of Deer Valley Road. The trail elements would provide a 10' wide paved surface, multi-use landscape buffers, landscaping, shade, small amenities (trash cans, benches, signage, water) and lighting.

Figure PR4 – Trail Standards and Needs

Surface Type	Miles	\$/Linear Foot
Paved	14	\$240
Natural	27	\$5
TOTAL	41	\$85 <= weighted avg
Linear Feet =>		216,480

Allocation Factors for Park Improvements

Residential Proportionate Share	90%
Nonresidential Proportionate Share	10%
Glendale East & West 101 Residents in 2013	222,749
Glendale East and West 101 Jobs in 2013	72,963

Trail Standards and Needs

	Linear Feet	Capital Cost
Residential (per person)	0.87	\$94.69
Nonresidential (per job)	0.30	\$8.59

Trail Needs

	Year	Glendale East & West 101 Residents	Glendale East and West 101 Jobs	Linear Feet of Trails
Base	2013	222,749	72,963	216,480
Year 1	2014	223,971	74,570	218,026
Year 2	2015	225,212	76,254	219,611
Year 3	2016	226,473	78,022	221,238
Year 4	2017	227,753	79,881	222,910
Year 5	2018	229,051	81,840	224,626
Year 6	2019	230,370	83,906	226,393
Year 7	2020	231,711	86,089	228,213
Year 8	2021	234,299	88,400	231,162
Year 9	2022	236,888	90,850	234,154
Year 10	2023	239,476	93,452	237,190
Ten-Yr Increase		16,727	20,488	20,710
Total Projected Expenditures on Trails =>				\$1,760,000

Parks and Recreation Development Fees

Updated development fees for parks and recreation facilities are shown in Figure PR5 (column with light green shading). For a single residential unit, the proposed fee is 45% more than the current fee, while proposed fees for dwellings in a residential structure with two or more units are 5% more than the current fee. Cost factors for parks and recreation facilities are summarized in the upper portion of the table. The conversion of costs per service unit into a cost per development unit is also shown in the table below. For residential development, average number of persons per housing unit is based on 2010 census data for Glendale, as documented in Appendix C. For nonresidential development, average jobs per thousand square feet of floor area, are documented in the land use assumptions (see Figure C10).

The cost of professional services related to preparation of the IIP and development fees is specifically authorized in Arizona's enabling legislation. As explained further in Appendix B the cost of professional service is allocated to the projected increase in service units over the next five years, which matches the mandatory update cycle for development fees. The recommended 5% reduction in residential fees makes projected revenues consistent with the cost allocation factors.

Figure PR5 – Parks and Recreation Service Units and Fees per Development Unit

Fee Component	Cost per Person	Cost per Job
Parks (land + improvements)	\$240.61	\$21.82
Trails	\$94.69	\$8.59
Professional Services	\$2.80	\$0.24
	5%	0%
Revenue Credit	(\$16.91)	\$0.00
TOTAL	\$321.24	\$30.65

Residential (per housing unit)

Type	Persons per Hsg Unit*	Preliminary Fee	Current Fee	Increase/ (Decrease)	% Change
Single Unit	2.83	\$909	\$625	\$284	45%
2+ Units per Structure	1.61	\$517	\$492	\$25	5%

* Figure C8, Land Use Assumptions.

Nonresidential (per 1,000 square feet of building)

Type	Jobs per 1,000 Sq Ft**	Preliminary Fee	Current Fee	Increase/ (Decrease)
Industrial	0.76	\$23	\$0	\$23
Commercial	1.41	\$43	\$0	\$43
Institutional	0.98	\$30	\$0	\$30
Office & Other Services	3.32	\$101	\$0	\$101

** Figure C10, Land Use Assumptions.

Projected Revenues for Parks and Recreation Facilities

Appendix A contains the forecast of revenues required by Arizona's enabling legislation. Development fee revenue for parks and recreation facilities is slightly less than the growth cost of infrastructure (i.e. approximately \$6.2 million over the next ten years). The table below indicates Glendale should receive approximately \$5.9 million in parks and recreation fee revenue over the next ten years, if actual development in the service area matches the land use assumptions documented in Appendix C and the City adopts the proposed development fees.

Figure PR6 – Parks and Recreation Development Fee Revenue

Ten-Year Growth-Related Costs for Parks and Recreation

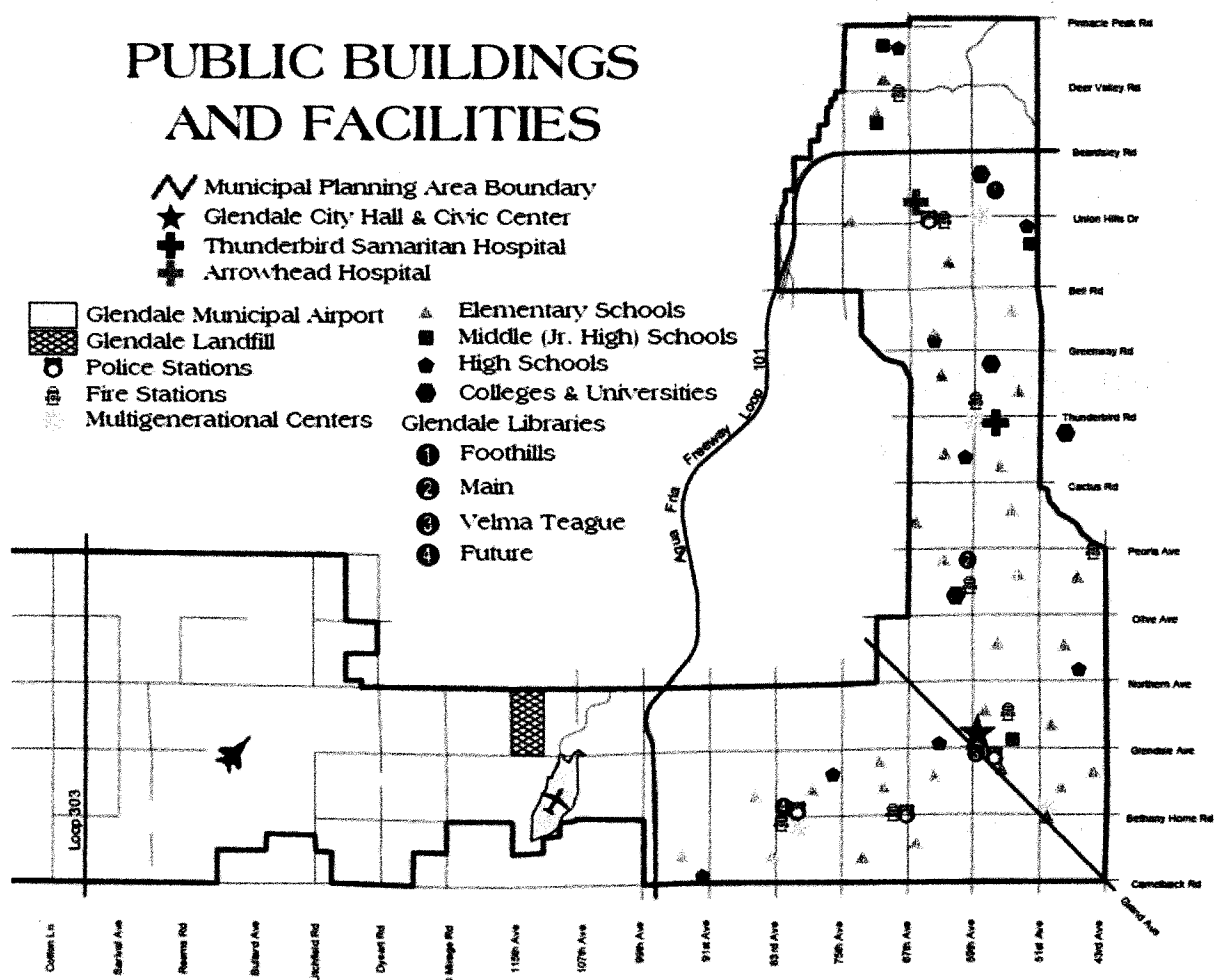
Parks (land plus improvements)	\$4,472,000
Trails	\$1,760,000
Total	\$6,232,000

		East and West 101 Service Areas						
		Single Unit \$909 per housing unit	2+ Units \$517 per housing unit	Industrial \$23 per 1000 Sq Ft	Commercial \$43 per 1000 Sq Ft	Institutional \$30 per 1000 Sq Ft	Office & Other Services \$101 per 1000 Sq Ft	
Year		71% of Hsg Units	29% Hsg Units	Sq Ft x 1000	Sq Ft x 1000	Sq Ft x 1000	Sq Ft x 1000	
Base	2013	64,029	26,153	11,990	15,910	8,200	9,980	
Year 1	2014	64,380	26,296	12,230	16,130	8,350	10,220	
Year 2	2015	64,737	26,442	12,480	16,370	8,490	10,460	
Year 3	2016	65,099	26,590	12,730	16,610	8,640	10,720	
Year 4	2017	65,467	26,740	13,000	16,860	8,790	11,000	
Year 5	2018	65,841	26,893	13,270	17,110	8,940	11,300	
Year 6	2019	66,220	27,048	13,540	17,380	9,100	11,620	
Year 7	2020	66,605	27,205	13,820	17,650	9,250	11,960	
Year 8	2021	67,349	27,509	14,120	17,930	9,410	12,320	
Year 9	2022	68,093	27,813	14,410	18,230	9,580	12,730	
Year 10	2023	68,837	28,117	14,720	18,540	9,740	13,150	
Ten-Yr Increase		4,808	1,964	2,730	2,630	1,540	3,170	
Projected Fees =>		\$4,370,000	\$1,015,000	\$63,000	\$113,000	\$46,000	\$320,000	
		Total Projected Revenues (rounded) =>						\$5,927,000

LIBRARY FACILITIES (NOT RECOMMENDED)

As shown in Figure L1, Glendale has three existing libraries and tentative plans for a fourth library in the West 101 area. The primary reason for the staff recommendation to suspend collect of library development fees is Glendale's limited fiscal resources. Opening a new library in the next ten years would require significant associated operating cost for staffing and operations. Also, development fees accumulate slowly over time, which would likely require additional debt to cover the initial construction of a fourth library.

Figure L1 – Map of Existing and Future Libraries



STREET FACILITIES IIP

ARS 9-463.05.T.7 (e) defines the facilities and assets which can be included in the Street Facilities IIP.

"Street facilities located in the service area, including arterial or collector streets or roads that have been designated on an officially adopted plan of the municipality, traffic signals and rights-of-way and improvements thereon."

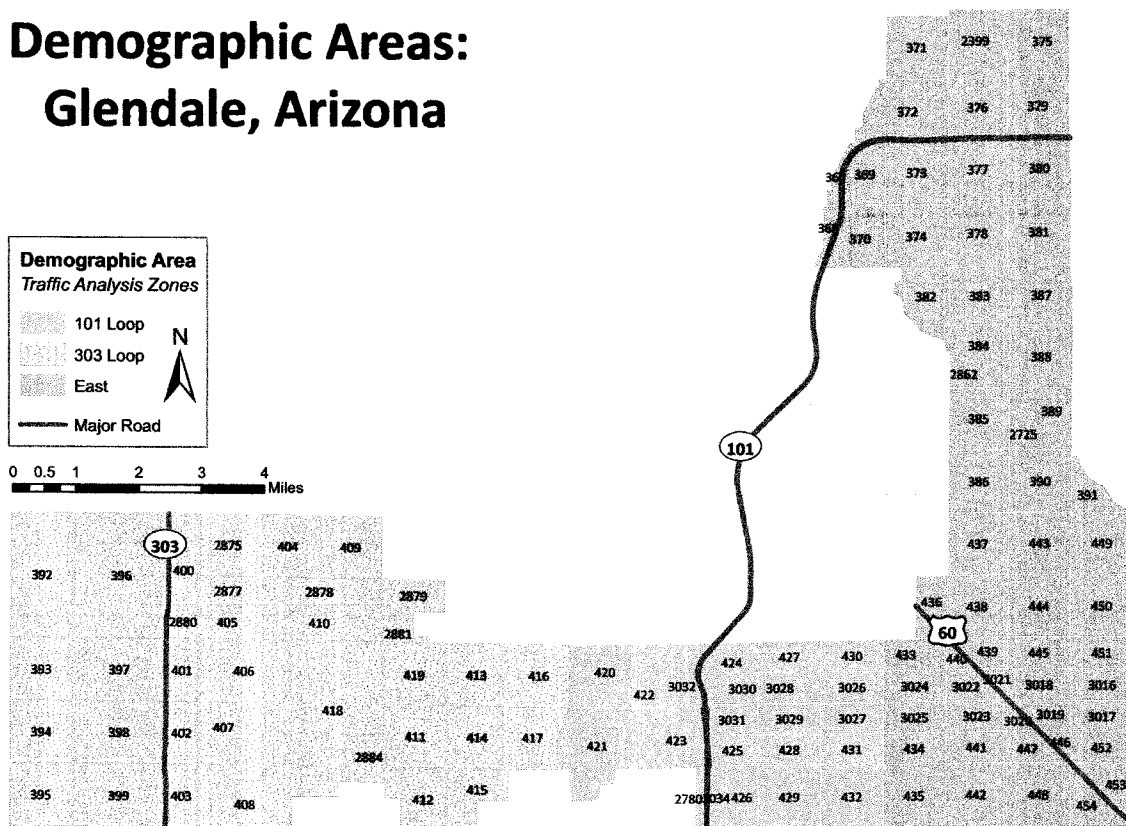
Glendale development fees for streets are derived using a plan-based approach for arterial streets and intersection improvements. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City's comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Service Areas for Streets

Glendale has identified congestion-related improvements for three demographic areas (i.e. East, West 101, and West 303). The land use assumptions (see Appendix C) describe the boundaries and provide demographic data for the three areas shown below in Figure S1.

Figure S1 – Map of Service Areas for Streets

Demographic Areas: Glendale, Arizona



Prepared for Glendale, Arizona by TischlerBise

Existing Improved Intersections, Lane Miles, and Infrastructure Standards

Lane miles of arterials and improved arterial-arterial or arterial-collector intersections are used to document existing infrastructure standards in Glendale. A lane mile is a rectangular area that is one travel lane wide and one mile long. Glendale will use Vehicle Miles of Travel (VMT) on an average weekday as the service units for documentation of infrastructure standards. One vehicle traveling one mile is a VMT. Documentation of existing and projected VMT by service area is discussed below (see Figure S5, S6, and S7).

Glendale's current policy of is to require half-street improvement of adjacent arterials as a condition of development approval. All local and collector streets are considered project-level improvements not eligible for development fee credits or reimbursements. For the purpose of development fees, intersection improvements include signalization and turn lanes where both streets are classified as arterials, or one street is an arterial and the other street is classified as a collector. Access improvements are considered to be project-level improvements subject to development agreements and are not eligible for development fee credits or reimbursements.

In East Glendale, there are currently 343 lane miles of arterials and 143.5 signalized intersections. The current standard of 1.33 lane miles per 10,000 VMT will decrease to 1.26 by 2023 as the City only anticipates a small addition of 0.7 lane miles over the next ten years in East Glendale. The current standard of 0.56 traffic signals per 10,000 VMT will decrease to 0.55 by 2023, with Glendale planning to improve six intersections in East Glendale over the next ten years. Specific street improvements for East Glendale are listed in Figure S8.

In the West 101 area of Glendale, there are currently 95 lane miles of arterials and 28.5 signalized intersections. The current standard of 1.33 lane miles per 10,000 VMT will decrease to 0.91 by 2023, with the City planning to construct 7.1 lane miles over the next ten years in West 101 Glendale. The current standard of 0.40 traffic signals per 10,000 VMT will decrease to 0.30 by 2023, with Glendale planning to improve 5.25 intersections in the West 101 area over the next ten years. Specific street improvements for West 101 Glendale are listed in Figure S9.

In far west Glendale, referred to as the West 303 area, there are currently 172.5 lane miles of arterials and six signalized intersections. The current standard of 1.33 lane miles per 10,000 VMT will decrease to 1.18 by 2023 as the City constructs three lane miles over the next ten years in the West 303 area. The current standard of 0.05 traffic signals per 10,000 VMT will not change by 2023, with Glendale planning to improve one intersection in West 303 Glendale over the next ten years. Specific street improvements for West 303 Glendale are listed in Figure S10.

Forecast of Service Units

Glendale will use average weekday vehicle miles of travel as the service units for documenting existing infrastructure standards and allocating the cost of future improvements. TischlerBise created an aggregate travel model to convert development units within Glendale's three service areas into vehicle trips and vehicle miles of travel. Figure S2 summarizes the input variables for the travel model. Trip generation rates, expressed as average weekday Vehicle Trip Ends (VTE), are from the Institute of Transportation Engineers (ITE). HU is an abbreviation for housing unit. KSF is an abbreviation for square feet of nonresidential floor area, expressed in thousands. Each input variables is described further below.

Figure S2 – Input Variables for Travel Demand Model

	ITE Code	Dev Type	Weekday VTE	Dev Unit	Trip Adj	Trip Length Wt Factor
R1	210	Single Units	8.43	HU	64%	1.21
R2	220	2+ Units	4.70	HU	64%	1.21
NR1	150	Industrial	3.56	KSF	50%	0.73
NR2	820	Commercial	42.70	KSF	33%	0.66
NR3	520	Institutional	15.43	KSF	33%	0.73
NR4	710	Office	11.03	KSF	50%	0.73

Trip Generation Rates

Glendale development fees for streets are based on average weekday vehicle trip ends. Trip generation rates are from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate street fees, trip generation rates require an adjustment factor to avoid double counting each trip at both the origin and destination point. Therefore, the basic trip adjustment factor is 50%. As discussed further below, the fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

As an alternative to simply using the national average trip generation rate for residential development, the Institute of Transportation Engineers (ITE) publishes regression curve formulas that may be used to derive custom trip generation rates using local demographic data. Key independent variables needed for the analysis (i.e. vehicles available, housing units, households and persons) are available from American Community Survey (ACS 2011) data for Glendale. Customized average weekday trip generation rates by type of housing, which are lower than the national averages, are shown in Figure S3.

Figure S3 – Customized Residential Trip Rates for Glendale

Glendale, Arizona		Households (2)			Vehicles per Household by Tenure
	Vehicles Available (1)	Single Unit per Structure	2+ Units per Structure	Total	
Owner-occupied	93,929	46,200	430	46,630	2.01
Renter-occupied	41,536	12,338	20,231	32,569	1.28
TOTAL	135,465	58,538	20,661	79,199	1.71
Housing Units (6) =>		65,528	27,361	92,889	

Units per Structure	Persons (3)	Trip Ends (4)	Vehicles by Type of Housing	Trip Ends (5)	Average Trip Ends	Trip Ends per Housing Unit
Single Unit	183,638	475,335	108,798	628,912	552,124	8.43
2+ Units	43,748	151,741	26,667	105,362	128,552	4.70
TOTAL	227,386	627,076	135,465	734,275	680,676	7.33

(1) Vehicles available by tenure from Table B25046, American Community Survey, 2011.

(2) Households by tenure and units in structure from Table C25032, American Community Survey, 2011.

(3) Persons by units in structure from Table C25033, American Community Survey, 2011.

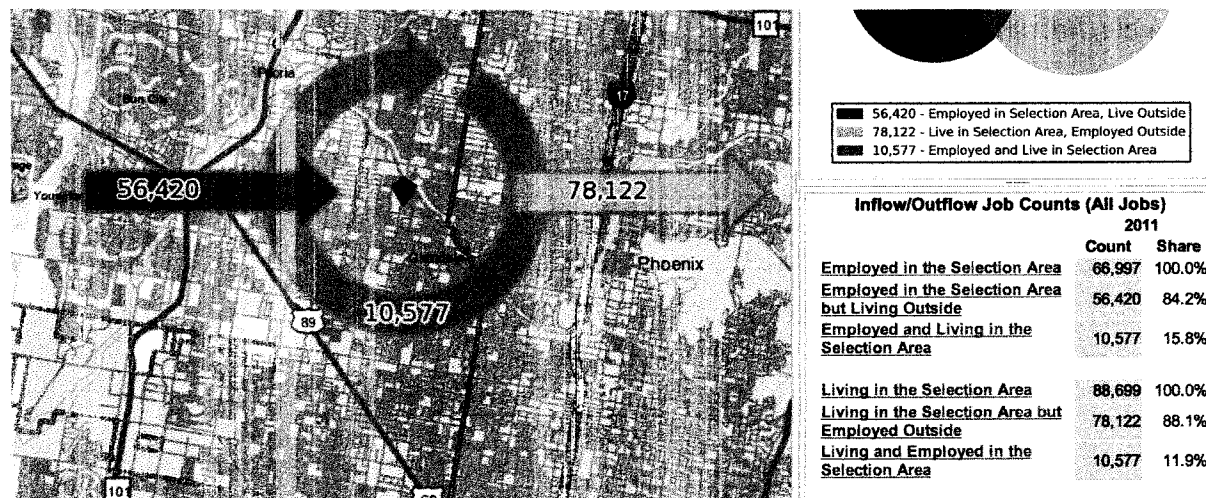
(4) Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2012). For single unit housing (ITE 210), the fitted curve equation is $\text{EXP}(0.91 \cdot \text{LN}(\text{persons}) + 1.52)$. To approximate the average population of the ITE studies, persons were divided by 330 and the equation result multiplied by 330. For 2+ unit housing (ITE 220), the fitted curve equation is $(3.47 \cdot \text{persons}) - 64.48$.

(5) Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2012). For single unit housing (ITE 210), the fitted curve equation is $\text{EXP}(0.99 \cdot \text{LN}(\text{vehicles}) + 1.81)$. To approximate the average number of vehicles in the ITE studies, vehicles available were divided by 423 and the equation result multiplied by 423. For 2+ unit housing (ITE 220), the fitted curve equation is $(3.94 \cdot \text{vehicles}) + 293.58$.

(6) Housing units from Table B25024, American Community Survey, 2011.

Adjustments for Commuting Patterns and Pass-By Trips

Residential development has a larger trip adjustment factor of 64% to account for commuters leaving Glendale for work. In other words, residential development is assigned all inbound trips plus 14% of outbound trips to account for job locations outside of Glendale. According to the 2009 National Household Travel Survey (see Table 30) weekday work trips are typically 31% of production trips (i.e., all out-bound trips, which are 50% of all trip ends). As shown in Figure S4, the Census Bureau's web application OnTheMap indicates that approximately 88% of resident workers traveled outside the city for work in 2011. In combination, these factors ($0.31 \times 0.50 \times 0.88 = 0.14$) support the additional 14% allocation of trips to residential development.

Figure S4 - Inflow/Outflow Analysis

For commercial development, the trip adjustment factor is less than 50% because retail development attracts vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, the ITE data indicates that 34% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66% of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 66% multiplied by 50%, or approximately 33% of the trip ends.

Many institutional land uses, like schools and day-care, also have significant pass-by and diverted link trips as children are dropped off and picked up by parents on their way to some other primary destination. Given this travel pattern, TischlerBise recommends the pass-by adjustment for all institutional development.

Trip Length Weighting Factor by Type of Land Use

The streets fee methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As documented in Table 6 of the 2009 National Household Travel Survey, vehicle trips from residential development are approximately 121% of the average trip length. The residential trip length adjustment factor includes data on home-based work trips, social, and recreational purposes. Conversely, shopping trips associated with commercial development are roughly 66% of the average trip length while other nonresidential development typically accounts for trips that are 73% of the average for all trips.

Lane Capacity

Street impact fees are based on a lane capacity standard of 7,500 vehicles per lane, obtained from the Florida Department of Transportation, Quality/LOS Handbook (2009). This standard is for a Class II, four-lane divided road, operating at LOS "D", averaging 33,200 average daily trips, with a 10% reduction for major city/county roads. The specific formula is 33200, divided by 4, multiplied by 0.90, with the result rounded to hundreds. City staff and URS, the City's transportation consultant, reviewed the lane capacity standard and confirmed it was appropriate for Glendale.

Projected Travel Demand

The relationship between development in Glendale's three service areas, and the need for system improvements, is shown in Figures S5, S6, and S7. At the top of the tables are both existing and projected development units in Glendale, by service area. The tables include annual calculations, but years 6-9 are hidden from view. Trip generation rates and trip adjustment factors convert projected development into average weekday vehicle trips, as shown in the middle section of the table. A typical vehicle trip, such as a person leaving their home and traveling to work, generally begins on a local street that connects to a collector street, which connects to an arterial road and eventually to a state or interstate highway. This progression of travel up and down the functional classification chain limits the average trip length determination, for the purpose of development fees, to the following question, "What is the average vehicle trip length on system improvements (i.e., arterial streets in Glendale)?"

With 343 lane miles of arterials in East Glendale and a lane capacity standard of 7,500 vehicles per lane per day, the existing development fee network has approximately 2.57 million vehicle miles of capacity (i.e., 7,500 vehicles per lane over the entire 343 lane miles). To derive the average utilization (i.e., average trip length expressed in miles) of the system improvements, we divide vehicle miles of capacity by vehicle trips attracted to development in Glendale. As shown below, development in East Glendale currently attracts 690,973 average weekday vehicle trips. Dividing 2,572,500 vehicle miles of capacity by 690,973 average weekday vehicle trips yields an un-weighted average trip length of approximately 3.72 miles. However, the calibration of average trip length includes the same adjustment factors used in the development fee calculations (i.e., journey-to-work commuting, commercial pass-by adjustment, and average trip length adjustment by type of land use). With these refinements, the weighted-average trip length is 3.82 miles.

At the bottom of Figure S5 are Vehicle Miles of Travel (VMT), which is a measurement unit equal to one vehicle traveling one mile. In the aggregate, VMT is the product of vehicle trips multiplied by the average trip length. Typical VMT calculations for development-specific traffic studies, along with most transportation models of an entire urban area, are derived from traffic counts on particular road segments multiplied by the length of that road segment. For the purpose of development fees, VMT calculations are based on attraction (inbound) trips to development located in the service area, with the trip lengths calibrated to the road network considered to be system improvements. This refinement eliminates pass-through or external- external trips, and travel on roads that are not system improvements (e.g. interstate highways).

Figure S5 – Ten-Year Travel Demand in East Glendale

Year->	Base	1	2	3	4	5	10	10-Year
East Glendale	2013	2014	2015	2016	2017	2018	2023	Increase
Single Units (71%)	57,571	57,747	57,925	58,102	58,281	58,460	59,871	2,300
2+ Units (29%)	23,515	23,587	23,659	23,732	23,805	23,878	24,455	940
Industrial KSF	10,230	10,360	10,490	10,610	10,740	10,860	11,440	1,210
Commercial KSF	14,610	14,750	14,900	15,040	15,190	15,330	16,090	1,480
Institutional KSF	7,130	7,250	7,370	7,500	7,620	7,750	8,420	1,290
Office & Other Services KSF	8,930	9,050	9,160	9,280	9,400	9,520	10,130	1,200
<i>Single Unit Res Trips</i>	310,607	311,557	312,517	313,472	314,438	315,403	323,016	
<i>2+ Units ResTrips</i>	70,733	70,950	71,166	71,386	71,605	71,825	73,561	
<i>Industrial Trips</i>	18,209	18,441	18,672	18,886	19,117	19,331	20,363	
<i>Commercial Trips</i>	205,870	207,842	209,956	211,929	214,042	216,015	226,724	
<i>Institutional Trips</i>	36,305	36,916	37,527	38,189	38,800	39,462	42,874	
<i>Office & Other Services Trips</i>	49,249	49,911	50,517	51,179	51,841	52,503	55,867	
Total Vehicle Trips	690,973	695,616	700,356	705,041	709,844	714,539	742,405	
Vehicle Miles of Travel (VMT)	2,571,024	2,585,582	2,600,392	2,615,082	2,630,084	2,644,824	2,736,807	165,783
LANE MILES	342.8	344.7	346.7	348.7	350.7	352.6	364.9	22.1
Improved Intersections	143.5	144.3	145.1	146.0	146.8	147.6	152.8	9.3

The analysis discussed above for East Glendale was replicated for the West 101 area, as shown in Figure S6. Average trip length in West 101 Glendale is 9.58 miles.

Figure S6 – Travel Demand in West 101 Area

Year->	Base	1	2	3	4	5	10	10-Year
West 101 Loop	2013	2014	2015	2016	2017	2018	2023	Increase
Single Units (71%)	6,458	6,633	6,813	6,997	7,186	7,381	8,966	2,508
2+ Units (29%)	2,638	2,709	2,783	2,858	2,935	3,015	3,662	1,024
Industrial KSF	1,760	1,870	1,990	2,120	2,260	2,410	3,280	1,520
Commercial KSF	1,300	1,380	1,470	1,570	1,670	1,780	2,450	1,150
Institutional KSF	1,070	1,100	1,120	1,140	1,170	1,190	1,320	250
Office & Other Services KSF	1,050	1,170	1,300	1,440	1,600	1,780	3,020	1,970
<i>Single Unit Res Trips</i>	34,842	35,786	36,757	37,750	38,770	39,822	48,373	
<i>2+ Units ResTrips</i>	7,935	8,149	8,371	8,597	8,828	9,069	11,015	
<i>Industrial Trips</i>	3,133	3,329	3,542	3,774	4,023	4,290	5,838	
<i>Commercial Trips</i>	18,318	19,446	20,714	22,123	23,532	25,082	34,523	
<i>Institutional Trips</i>	5,448	5,601	5,703	5,805	5,958	6,059	6,721	
<i>Office & Other Services Trips</i>	5,791	6,453	7,170	7,942	8,824	9,817	16,655	
Total Vehicle Trips	75,467	78,763	82,257	85,990	89,935	94,139	123,127	
Vehicle Miles of Travel (VMT)	712,197	739,811	768,887	799,649	832,045	866,352	1,111,015	398,818
LANE MILES	95.0	98.6	102.5	106.6	110.9	115.5	148.1	53.2
Improved Intersections	28.5	29.6	30.8	32.0	33.3	34.7	44.5	16.0

The travel demand analysis of the West 303 area is shown in Figure S7. Average trip length in West 303 Glendale is 16.0 miles. A unique feature of the West 303 needs analysis is the expectation that Glendale will not annex any significant amount of residential development over the next five years. Even though the table below covers ten years, the City must update the land use assumptions and IIP every five years and will reevaluate this assumption during the update process.

Figure S7 – Travel Demand in West 303 Area

Year->	Base	1	2	3	4	5	10	10-Year
West 303 Loop	2013	2014	2015	2016	2017	2018	2023	Increase
Single Units (71%)	7,534	7,534	7,534	7,534	7,534	7,534	7,534	0
2+ Units (29%)	3,077	3,077	3,077	3,077	3,077	3,077	3,077	0
Industrial KSF	770	880	1,000	1,150	1,310	1,500	2,920	2,150
Commercial KSF	690	740	780	830	880	940	1,270	580
Institutional KSF	490	510	530	550	570	580	690	200
Office & Other Services KSF	2,760	2,830	2,910	3,000	3,080	3,170	3,640	880
Single Unit Res Trips	40,647	40,647	40,647	40,647	40,647	40,647	40,647	
2+ Units ResTrips	9,256	9,256	9,256	9,256	9,256	9,256	9,256	
Industrial Trips	1,371	1,566	1,780	2,047	2,332	2,670	5,198	
Commercial Trips	9,723	10,427	10,991	11,696	12,400	13,246	17,896	
Institutional Trips	2,495	2,597	2,699	2,801	2,902	2,953	3,513	
Office & Other Services Trips	15,221	15,607	16,049	16,545	16,986	17,483	20,075	
Total Vehicle Trips	78,713	80,101	81,421	82,991	84,524	86,254	96,584	
Vehicle Miles of Travel (VMT)	1,291,732	1,307,158	1,321,947	1,339,493	1,356,602	1,375,872	1,491,316	199,584
LANE MILES	172.2	174.3	176.3	178.6	180.9	183.5	198.8	26.6
Improved Intersections	6.0	6.1	6.1	6.2	6.3	6.4	6.9	0.9

Future Improvements to Street Facilities

URS worked with Glendale engineering staff to create ten-year infrastructure improvements plans for each service area. The engineering team evaluated projects identified by the region's computerized transportation model and local traffic studies. The "need" for improvements due to traffic "congestion" is more difficult to determine for an open system, like streets, than for closed systems, like water and sewer systems. Also, the demand for street capacity can be influenced by development units outside the service area and by what is known as "triple convergence." In essence, this concept acknowledges that transportation capacity is consumed by drivers changing their time, route, and mode of travel, with the latter being more significant in urban areas. Because "congestion" is a relative and more subjective term that is closely connected with a person's willingness to pay, TischlerBise recommends that development fees for street improvements embrace the willingness-to-pay concept. The prioritized lists of street improvements shown in Figures S8-10 can be expanded or contracted until the perceived need for improvements balances the willingness to pay for the improvements through development fees. The prioritized improvements are in areas expected to experience congestion problems due to traffic flowing from a larger travel shed (conceptually like a funnel that tapers to fit into a bottleneck). Therefore, the location of improvements is not based on accurately forecasting the exact location of future development. If a developer is asked to construct a system improvement (i.e. a project on the list) as a condition of development approval, it will be necessary for Glendale to provide a site-specific credit or reimburse the developer from future fee collections. The City will continue to require project level improvements, such as turn lanes and signals for ingress/egress, and half-street construction of adjacent arterials.

Figure S8 summarizes the streets IIP for East Glendale, including improvements to six intersections and widening one arterial (0.7 lane miles of capacity). The projected cost of improvements to streets in the east service area is \$10.3 million.

Figure S8 – East IIP for Streets

2014-2018					
Priority	Project Name	Type	Added Capacity	Description	Est. Cost (millions)
1	59th Ave. & Olive Ave.	Intersection Capacity Improvements	1 intersection	Including Olive WB & EB Rt Turn lanes, SB Bus Bay (S of Olive), and NB Bus bay (N of Olive)	1.473
2	59th Ave. & Glendale Ave. DMS (Sports Facilities Fiber)	DMS		Install 2 DMS along 59th Ave. and 1 on Glendale Ave. NB and SB 59th Ave. approaching L 101. WB Glendale Ave. west of 67th Ave. on the same structure as the EB sign (no com needed)	0.626
3	51st Ave. & Olive Ave. ITS (Last Mile ITS)	ITS		Construct last mile ITS connections to intersections along 51st Ave. and Olive Ave. (5.7% local match and 100% design)	0.247
Subtotal					2.346
2019-2023					
Priority	Project Name	Type	Added Capacity	Description	Est. Cost (millions)
4	59th Ave. & Thunderbird Rd.	Intersection Capacity Improvements	1 intersection	Improvements could include new right-turn lanes, dual left-turn lanes, additional through lanes, and new bus bays	1.750
5	67th Ave DMS: Camelback to Pinnacle Peak	DMS		Install 4 DMS along 67th Avenue. NB and SB 67th Ave. approaching Glendale Ave. and Loop 101.	0.976
6	59th Ave. & Northern	Intersection Capacity Improvements	1 intersection	Improvements could include new right-turn lanes, dual left-turn lanes, additional through lanes, and new bus bays	0.900
7	51st Ave. & Peoria	Intersection Capacity Improvements	1 intersection	Improvements could include new right-turn lanes, dual left-turn lanes, additional through lanes, and new bus bays	0.800
8	75th : Loop 101 to Rose Garden Lane	Segment	0.7 lane-miles	Add 1 NB lane and 1 SB lane	2.617
9	63rd & Northern Ave.	Minor Intersection	1 minor intersection	Add Traffic Signal, Conduit, Fiber, Cable, Camera	0.514
10	Ocotillo & 67th Avenue	Minor Intersection	1 minor intersection	Add Traffic Signal, Conduit, Fiber, Cable	0.415
Subtotal					7.972
			6	Intersections	
East Service Area Total			0.7	Lane-Miles	10.318

Proposed improvements in the West 101 service area include 5.25 intersections, plus 7.1 lane miles of arterials. As shown in Figure S9, with total street improvements in West 101 Glendale are estimated to cost \$22.46 million over ten years.

Figure S9 – West 101 IIP for Streets

West Loop 101 Service Area Prioritized Projects -2014 to 2023					
2014-2018					
Priority	Project Name	Type	Added Capacity	Description	Est. Cost (millions)
1A	Incremental Outside Lane Widening	Segment	1 lane-mile	Includes pavement, curb & Gutter, sidewalk, landscaping, street lights, ITS, and ROW	4.100
1B	Incremental Inside Lane	Segment	1 lane-mile	Includes pavement	0.900
2	99th Ave. ITS/DMS: Camelback - Northern	ITS/Signals		Install conduit, fiber, CCTV and DMS on 99th Ave. between Camelback and Northern	1.942
3	Camelback Road DMS	DMS		Install 1 DMS along Camelback Road. WB Camelback east of 91st Ave.	0.371
4	99th Ave/Montebello	Minor Intersection Improvements		25% of new traffic signal	0.125
Subtotal					7.438
2019-2023					
Priority	Project Name	Type	Added Capacity	Description	Est. Cost (millions)
5	Glendale Ave. ITS: 99th Ave. to 115th Ave.	ITS/DMS		Install conduit, fiber, CCTV and 2 DMS.	1.077
6	Bethany Home Road: 83rd Ave. to 91st Ave.	Segment	.1 lane-mile	Widen to 4 lanes (north 1/2)	3.703
7	Incremental Minor Intersection Improvements	Minor Intersection Improvements	5 minor intersections	Add Traffic signal, conduit, fiber, cable, camera and widen collector street as necessary. (\$500,000 each)	2.500
8	Glendale Ave. DMS: 75th to 115th	DMS		Install 1 DMS along Glendale Ave. WB Glendale east of 91st Ave.	0.242
9A	Incremental Outside Lane Widening	Segment	1.5 lane-miles	Includes pavement, curb & gutter, sidewalk, landscaping, street lights, ITS and ROW	6.150
9B	Incremental Inside Lane Installation	Segment	1.5 lane-miles	Includes pavement	1.350
Subtotal					15.022
			5.25	Intersections	
West Loop 101 Service Area Total			7.1	Lane-miles	22.460

West 303 Glendale's IIP for streets includes one intersection and three lane miles of additional capacity over the next ten years. The projected cost of improvements is \$11.08 million.

Figure S10 – West 303 IIP for Streets

West Loop 303 Service Area - Prioritized Projects - 2014-2023					
2014-2018					
Priority	Project Name	Type	Added Capacity	Description	Est. Cost (millions)
1	Glendale Ave ITS: Litchfield -115th	DMS		DMS between Dysart and Litchfield, count stations west of Dysart and on Litchfield north and south of Glendale Ave. and fiber	1.634
2	Incremental Outside Lane Widening	Segment	0.5 lane-mile	Includes pavement, curb & gutter, sidewalk, landscaping, street lights, ITS and ROW	2.000
3	Incremental Inside Lane Installation	Segment	1 lane-mile	Includes pavement	0.900
4	Incremental Intersection Improvement	Intersection Capacity	1 intersection	Includes pavement widening, traffic signal, curb & gutter, sidewalk, sidewalk ramps, ITS and ROW	2.300
Subtotal					6.834
2019-2023					
5	Northern Parkway ITS: Sarival to 115th	DMS		Install conduit, fiber, CCTV and DMS along Northern Parkway and connect it to the system at Glendale Ave. and Litchfield	1.345
6	Incremental Outside Lane Widening	Segment	0.5 lane-mile	Includes pavement, curb & gutter, sidewalk, landscaping, street lights, ITS and ROW	2.000
7	Incremental Inside Lane Installation	Segment	1 lane-mile	Includes pavement	0.900
Subtotal					4.245
			1	Intersection	
Total			3	Lane Miles	11.079

Development Fees for Streets

Figure S11 indicates 2013 and 2023 development units (at the top) and the increase in average weekday vehicle miles of travel in the middle of the table. The service unit index compares VMT by type of land use to the travel demand for a single residential unit. Current and proposed fees are shown at the bottom of Figure S11. Proposed street development fees in East Glendale are higher for residential development, but generally lower for nonresidential development. To derive the streets fee by type of development, multiply its proportionate share factor (based on the ten-year increase in VMT as shown in the right column in the middle section) by the total cost of improvements and divide by the increase in development units. For example, the fee for a single residential unit is $0.3461 * \$10,318,00 / 2,301$, or \$1,551 per unit (truncated).

Figure S11 – Streets Development Fee Schedule East

Development Type (1)	2013 Development Units (2)	2023 Development Units (2)	Additional Units 2013-2023
Single Housing Units (71%)	57,570	59,871	2,301
2+ Housing Units (29%)	23,515	24,455	940
Industrial KSF	10,230	11,440	1,210
Commercial KSF	14,610	16,090	1,480
Institutional KSF	7,130	8,420	1,290
Office & Other Services KSF	8,930	10,130	1,200
Housing Unit Total	81,085	84,326	3,241
Nonres KSF Total	40,900	46,080	5,180

(1) Single Housing Units = SFD, SFA, and MH;
 KSF = square feet of floor area in thousands.
 (2) Land Use Assumptions (see Appendix C).
 (3) Trip Generation, Institute of Transportation Engineers, 2012.
 Retail and institutional include 34% pass-by adjustment.

Streets Cost Allocation - East Glendale

Development Type	Avg Wkdy Veh Trip Ends per Development Unit (3)	Trip Adjustment Factors	Trip Length Weighting Factor	Vehicle Miles of Capacity per Development Unit	Service Unit Index	Ten-Year VMT Increase	Proportionate Share by Development Type
Single Housing Units	8.43	64%	121%	24.94	0.98	57,382	34.61%
2+ Housing Units	4.70	64%	121%	13.90	0.55	13,069	7.88%
Industrial	3.56	50%	73%	4.96	0.20	6,006	3.62%
Commercial	42.70	33%	66%	35.53	1.40	52,579	31.71%
Institutional	15.43	33%	73%	14.20	0.56	18,317	11.05%
Office & Other Services	11.03	50%	73%	15.38	0.61	18,455	11.13%
TOTAL						165,808	100.00%

3.82 <= average utilization (trip miles)

343 <= existing arterial lane miles

Street Fees - East Glendale

Development Type	Current Fees	Proposed Fee in East Glendale	\$ Change	% Change
Single Housing Units	\$694	\$1,551	\$857	123%
2+ Housing Units	\$408	\$865	\$457	112%
Industrial	\$415	\$308	(\$107)	-26%
Commercial	\$2,156	\$2,210	\$54	3%
Institutional	\$1,034	\$883	(\$151)	-15%
Office & Other Services	\$1,034	\$957	(\$77)	-7%

Ten-Year Improvements Plan => \$10,318,000

Figure S12 indicates 2013 and 2023 development units in the West 101 service area and the increase in average weekday vehicle miles of travel (see middle of table). The service unit index compares VMT by type of land use to the travel demand for a single residential unit. Current and proposed fees are shown at the bottom of the table below. Proposed fees are significantly higher than current fees for all types of development. To derive the streets fee per thousand square feet of industrial floor area multiply the proportionate share factor (0.0474) by the IIP cost (\$22,460,000) and divide by the ten-year increase in industrial space (1,520 square feet expressed in thousands), which yields \$701. The fee per KSF is multiplied by the size of a specific building (expressed in thousands) to yield the total development fee. For example, a 101,000 square feet warehouse would pay a street development fee of \$70,801.

Figure S12 – Streets Development Fee Schedule West 101

Development Type (1)	2013 Development Units (2)	2023 Development Units (2)	Additional Units 2013-2023
Single Housing Units (71%)	6,458	8,966	2,508
2+ Housing Units (29%)	2,638	3,662	1,024
Industrial KSF	1,760	3,280	1,520
Commercial KSF	1,300	2,450	1,150
Institutional KSF	1,070	1,320	250
Office & Other Services KSF	1,050	3,020	1,970
Housing Unit Total	9,096	12,628	3,532
Nonres KSF Total	5,180	10,070	4,890

(1) Single Housing Units = SFD, SFA, and MH;
KSF = square feet of floor area in thousands.
(2) Land Use Assumptions (see Appendix C).
(3) Trip Generation, Institute of Transportation Engineers, 2012.
Retail and institutional include 34% pass-by adjustment.

Streets Cost Allocation - West 101 Glendale

Development Type	Avg Wkdy Veh Trip Ends per Development Unit (3)	Trip Adjustment Factors	Trip Length Weighting Factor	Vehicle Miles of Capacity per Development Unit	Service Unit Index	Ten-Year VMT Increase	Proportionate Share by Development TYPE
Single Housing Units	8.43	64%	121%	62.54	0.98	156,851	39.329%
2+ Housing Units	4.70	64%	121%	34.87	0.55	35,705	8.953%
Industrial	3.56	50%	73%	12.45	0.20	18,921	4.744%
Commercial	42.70	33%	66%	89.09	1.40	102,459	25.691%
Institutional	15.43	33%	73%	35.61	0.56	8,902	2.232%
Office & Other Services	11.03	50%	73%	38.57	0.61	75,980	19.051%
TOTAL						398,818	100.00%

9.58 <= average utilization (trip miles)

95.0 <= existing arterial lane miles

Street Fees - West 101 Glendale

Development Type	Current Fees	Proposed Fee in West 101	\$ Change	% Change
Single Housing Units	\$694	\$3,522	\$2,828	407%
2+ Housing Units	\$408	\$1,963	\$1,555	381%
Industrial	\$415	\$701	\$286	69%
Commercial	\$2,156	\$5,017	\$2,861	133%
Institutional	\$1,034	\$2,005	\$971	94%
Office & Other Services	\$1,034	\$2,172	\$1,138	110%

Ten-Year Improvements Plan => \$22,460,000

Figure S13 indicates 2013 and 2023 development units in the West 303 service area and the increase in average weekday vehicle miles of travel in the middle of the table. The service unit index compares VMT by type of land use to the travel demand for a single residential unit. Current and proposed fees are shown at the bottom of the table below. To derive the streets fee by type of development, multiply its proportionate share factor (based on the ten-year increase in VMT, as shown in the right column in the middle section) by the total cost of improvements and divide by the increase in development units.

Figure S13 – Streets Development Fee Schedule West 303

Development Type (1)	2013 Development Units (2)	2023 Development Units (2)	Additional Units 2013-2023
Single Housing Units (71%)*	7,534	7,534	0
2+ Housing Units (29%)*	3,077	3,077	0
Industrial KSF	770	2,920	2,150
Commercial KSF	690	1,270	580
Institutional KSF	490	690	200
Office & Other Services KSF	2,760	3,640	880
Housing Unit Total	10,611	14,031	3,420
Nonres KSF Total	4,710	8,520	3,810

(1) Single Housing Units = SFD, SFA, and MH; KSF = square feet of floor area in thousands.

(2) Land Use Assumptions (see Appendix C).

(3) Trip Generation, Institute of Transportation Engineers, 2012.

Retail and institutional include 34% pass-by adjustment.

* Excluded from service area. Glendale anticipates no significant annexation of residential development over the next five years in the West 303 area.

Streets Cost Allocation - West 303 Glendale

Development Type	Avg Wkdy Veh Trip Ends per Development Unit (3)	Trip Adjustment Factors	Trip Length Weighting Factor	Vehicle Miles of Capacity per Development Unit	Service Unit Index	Ten-Year VMT Increase	Proportionate Share by Development TYPE
Single Housing Units*	8.43	64%	121%	104.45	0.95	0	0.00%
2+ Housing Units*	4.70	64%	121%	58.23	0.53	0	0.00%
Industrial	3.56	50%	73%	20.79	0.19	44,699	22.40%
Commercial	42.70	33%	66%	148.80	1.36	86,305	43.24%
Institutional	15.43	33%	73%	59.47	0.54	11,895	5.96%
Office & Other Services	11.03	50%	73%	64.42	0.59	56,685	28.40%
TOTAL						199,584	100.00%

16.00 <= average utilization (trip miles)

172.5 <= existing arterial lane miles

Street Fees - West 303 Glendale

Development Type	Current Fees	Proposed Fee in West 303	\$ Change	% Change
Single Housing Units*	\$694	\$0	(\$694)	-100%
2+ Housing Units*	\$408	\$0	(\$408)	-100%
Industrial	\$415	\$1,154	\$739	178%
Commercial	\$2,156	\$8,260	\$6,104	283%
Institutional	\$1,034	\$3,001	\$2,267	219%
Office & Other Services	\$1,034	\$3,575	\$2,541	246%

Ten-Year Improvements Plan => \$11,079,000

Projected Revenue for Street Facilities

Appendix A contains the forecast of revenues required by Arizona's enabling legislation. Revenue projections shown below assume implementation of the proposed street fees and that development over the next ten years is consistent with the land use assumptions described in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the impact fee revenue. The street fee revenue projections in Figure S14 match the cost of planned system improvements for each service area.

Figure S14 – Projected Street Fee Revenue**East Glendale Street Fee Revenue**

		<i>Single Unit</i>	<i>2+ Units</i>	<i>Industrial</i>	<i>Commercial</i>	<i>Institutional</i>	<i>Office & Other Services</i>
		\$1,551 per housing unit	\$865 per housing unit	\$308 per 1000 Sq Ft	\$2,210 per 1000 Sq Ft	\$883 per 1000 Sq Ft	\$957 per 1000 Sq Ft
		<i>Hsg Units</i>	<i>Hsg Units</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>
Base	2013	57,571	23,515	10,230	14,610	7,130	8,930
Year 1	2014	57,747	23,587	10,360	14,750	7,250	9,050
Year 2	2015	57,925	23,659	10,490	14,900	7,370	9,160
Year 3	2016	58,102	23,732	10,610	15,040	7,500	9,280
Year 4	2017	58,281	23,805	10,740	15,190	7,620	9,400
Year 5	2018	58,460	23,878	10,860	15,330	7,750	9,520
Year 10	2023	59,871	24,455	11,440	16,090	8,420	10,130
<i>Ten-Yr Increase</i>		2,300	940	1,210	1,480	1,290	1,200
Fee Revenue =>		\$3,567,000	\$813,000	\$373,000	\$3,271,000	\$1,139,000	\$1,148,000
						Total North =>	\$10,311,000

West 101 Glendale Street Fee Revenue

		<i>Single Unit</i>	<i>2+ Units</i>	<i>Industrial</i>	<i>Commercial</i>	<i>Institutional</i>	<i>Office & Other Services</i>
		\$3,522 per housing unit	\$1,963 per housing unit	\$701 per 1000 Sq Ft	\$5,017 per 1000 Sq Ft	\$2,005 per 1000 Sq Ft	\$2,172 per 1000 Sq Ft
		<i>Hsg Units</i>	<i>Hsg Units</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>
Base	2013	6,458	2,638	1,760	1,300	1,070	1,050
Year 1	2014	6,633	2,709	1,870	1,380	1,100	1,170
Year 2	2015	6,813	2,783	1,990	1,470	1,120	1,300
Year 3	2016	6,997	2,858	2,120	1,570	1,140	1,440
Year 4	2017	7,186	2,935	2,260	1,670	1,170	1,600
Year 5	2018	7,381	3,015	2,410	1,780	1,190	1,780
Year 10	2023	8,966	3,662	3,280	2,450	1,320	3,020
<i>Ten-Yr Increase</i>		2,508	1,024	1,520	1,150	250	1,970
Fee Revenue =>		\$8,833,000	\$2,010,000	\$1,066,000	\$5,770,000	\$501,000	\$4,279,000
						Total Central =>	\$22,459,000

West 303 Glendale Street Fee Revenue

		<i>Single Unit</i>	<i>2+ Units</i>	<i>Industrial</i>	<i>Commercial</i>	<i>Institutional</i>	<i>Office & Other Services</i>
		\$0 per housing unit	\$0 per housing unit	\$1,154 per 1000 Sq Ft	\$8,260 per 1000 Sq Ft	\$3,301 per 1000 Sq Ft	\$3,575 per 1000 Sq Ft
		<i>Hsg Units</i>	<i>Hsg Units</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>	<i>Sq Ft x 1000</i>
Base	2013	7,534	3,077	770	690	490	2,760
Year 1	2014	7,686	3,139	880	740	510	2,830
Year 2	2015	7,841	3,203	1,000	780	530	2,910
Year 3	2016	7,999	3,267	1,150	830	550	3,000
Year 4	2017	8,161	3,333	1,310	880	570	3,080
Year 5	2018	8,325	3,401	1,500	940	580	3,170
Year 10	2023	9,962	4,069	2,920	1,270	690	3,640
<i>Ten-Yr Increase</i>		2,428	992	2,150	580	200	880
Fee Revenue =>		\$0	\$0	\$2,481,000	\$4,791,000	\$660,000	\$3,146,000
						Total South =>	\$11,078,000

POLICE FACILITIES IIP

ARS 9-463.05.T.7 (f) defines the police facilities eligible for development fee funding.

"Police facilities, including all appurtenances, equipment and vehicles. Police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training officers from more than one station or substation."

The City of Glendale will use an incremental expansion cost methodology to maintain the current infrastructure standards for police vehicles and equipment. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City's comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Police Service Area

To hasten response times, police officers are dispersed throughout Glendale and routinely patrol all developed areas. The Police Department has one, citywide service area. Because Glendale anticipates on minor annexation of residential development in the West 303 area, the demand for police facilities in this area is primarily due to the expectation of significant nonresidential development.

Proportionate Share

ARS 9-463.05.B.3 states the development fee shall not exceed a proportionate share of the cost of necessary public services needed to serve new development. In Glendale, police infrastructure standards, projected needs, and development fees are based on both residential and nonresidential development. As shown in Figure P1, functional population was used to allocate police infrastructure and costs to residential and nonresidential development. Functional population is similar to what the U.S. Census Bureau calls "daytime population" by accounting for people living and working in a jurisdiction. Residents that don't work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Glendale are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Glendale are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2011 functional population data for Glendale, the cost allocation for residential development is 77% while nonresidential development accounts for 23% of the demand for public safety infrastructure.

Figure P1 – Functional Population

<u>Demand Units in 2011</u>		<u>Demand Hours/Day</u>	<u>Person Hours</u>
Residential			
Total Population*	230,482		
62% Residents Not Working	141,783	20	2,835,660
38% Resident Workers**	88,699		
12% Worked in City**	10,577	14	148,078
88% Worked Outside City**	78,122	14	1,093,708
	Residential Subtotal		4,077,446
	Residential Share =>		77%
Nonresidential			
Non-working Residents	141,783	4	567,132
Jobs Located in City**	66,997		
Residents Working in City**	10,577	10	105,770
Non-Resident Workers (inflow commuters)**	56,420	10	564,200
	Nonresidential Subtotal		1,237,102
	Nonresidential Share =>		23%
	TOTAL		5,314,548

* Annual Estimates of the Resident Population for Incorporated Places in Arizona: April 1, 2010 to July 1, 2011, U.S. Census Bureau.

** Inflow/Outflow Analysis, OnTheMap web application, U.S. Census Bureau data for all jobs.

Police Service Units and Infrastructure Standards

As specified in ARS 9-463.05.B.4 police development fees in Glendale are based on the same level of service provided to existing development. Development fees will be used to expand the fleet of police vehicles and purchase additional equipment that has a useful life of at least three years. Figure P2 lists police vehicles and equipment used by Glendale's Police Department during FY13-14. Items are ranked ordered by total cost (from most to least). Equipment provided to sworn officers, such as radios, weapons, cells phones, computers and safety gear, account for approximately one-third of the infrastructure cost. Patrol vehicles account for another third of the cost, with all other types of vehicles accounting for the remaining third. In FY13-14, Glendale has 802 vehicles and equipment items, with a weighted average cost of approximately \$29,400 per item. The inventory below excludes vehicles used for administrative services, plus several expensive items like armored vehicles and a large tractor-trailer truck that can adequately accommodate new development over the next ten years.

For residential development, Glendale will use resident population in the East and West 101 areas to derive current police infrastructure standards. For nonresidential development in the entire MPA, Glendale will use inbound, average-weekday, vehicle trips as the service unit. Trip generation rates per thousand square feet of floor area are highest for commercial development (retail and eating/drinking places), mid-range for office/institutional development, and lowest for industrial development. This ranking matches the relative demand for police services by type of nonresidential development.

As shown at the bottom of Figure P2, every 1,000 persons will require Glendale to purchase 2.8 additional police vehicles or equipment items. For nonresidential development, every 1,000 jobs will require the City to add 0.5 police vehicles or equipment items. To maintain the current infrastructure standard for police vehicles and equipment, each additional person requires a capital expenditure of \$120.46, with each additional vehicle trip to nonresidential development representing a capital cost of \$7.07.

Figure P2 – Glendale Police Vehicles and Equipment**Police Vehicle and Equipment Inventory**

Description	Items	Unit Cost	Total Cost
EQUIPMENT PER SWORN OFFICER	409	\$18,313	\$7,489,925
SEDAN FULL SIZE PD PATROL	144	\$50,274	\$7,239,456
SEDAN INTERMEDIATE PUBLIC SAFETY	88	\$28,788	\$2,533,366
SEDAN FULL SIZE	50	\$31,767	\$1,588,339
PICKUP POLICE	28	\$41,600	\$1,164,800
MOTORCYCLES POLICE	25	\$34,125	\$853,120
SUV EMERGENCY SERVICES	14	\$45,495	\$636,923
TRUCK VAN BODY	2	\$239,088	\$478,175
BUS COMMAND CENTER	1	\$350,188	\$350,188
SUV 5-6 PASSENGER	6	\$51,432	\$308,591
CART ALL TERRAIN VEHICLE	10	\$16,732	\$167,323
VAN PD PRISONER TRANSPORT	3	\$54,420	\$163,260
TRAILER MOUNTED TACTICAL PLAT	1	\$114,967	\$114,967
TRUCK TRACTOR CONVENTIONAL	1	\$108,086	\$108,086
VAN HANDICAPPED ACCESS	1	\$91,124	\$91,124
HEAVY PICKUP	2	\$43,781	\$87,561
SEDAN INTERMEDIATE	3	\$21,556	\$64,667
LARGE TRAILER VAN BODY	2	\$26,988	\$53,975
VAN HIGH CUBE CARGO	1	\$46,365	\$46,365
TRAILER RADAR PUBLIC SAFETY	6	\$5,398	\$32,385
TRAILER VAN BODY	4	\$3,994	\$15,977
CART UTILITY MULTI WHEELED	1	\$10,660	\$10,660
Total	802		\$23,599,231

Allocation Factors for Police Vehicles and Equipment

Average Cost per Item	\$29,400
Residential Proportionate Share	77%
Nonresidential Proportionate Share	23%
East and West 101 Residents in 2013	222,749
Average Weekday Vehicle Trips to Nonresidential Development in 2013	371,133

Infrastructure Standards for Police Vehicles and Equipment

	Vehicles and Equipment	Capital Cost per Service Unit
Residential (per person)	0.0028	\$120.46
Nonresidential (per vehicle trip)	0.0005	\$7.07

Need for Future Police Facilities

Arizona's development fee enabling legislation requires jurisdictions to convert land use assumptions into service units and the corresponding need for additional infrastructure over the next ten years. As shown in Figure P3, projected population and vehicle trips to nonresidential development drive the need for police buildings and vehicles. To maintain current standards, Glendale will need approximately 89 police vehicles or equipment items over the next ten years. The projected capital expenditure on additional police vehicles or equipment items is \$2.6 million over the next ten years.

Figure P3 – Police Facilities Needed to Accommodate Growth

		Police Infrastructure Needs		
	<i>Year</i>	<i>East & West 101 Population</i>	<i>Glendale MPA Nonres Veh Trips</i>	<i>Vehicles and Equipment</i>
Base	2013	222,749	371,133	802
Year 1	2014	223,971	378,136	809
Year 2	2015	225,212	385,320	816
Year 3	2016	226,473	392,914	823
Year 4	2017	227,753	400,758	831
Year 5	2018	229,051	408,910	838
Year 6	2019	230,370	417,610	846
Year 7	2020	231,711	426,423	854
Year 8	2021	234,299	435,750	866
Year 9	2022	236,888	445,775	878
Year 10	2023	239,476	456,247	891
<i>Ten-Yr Increase</i>		16,727	85,114	89
Total Projected Expenditures (rounded) =>				\$2,617,000

Police Development Fees

Infrastructure standards and cost factors for police are summarized in the upper portion of Figure P4. The conversion of infrastructure needs and costs per service unit into a cost per development unit is also shown in the table below. For residential development, average number of persons per dwelling unit provides the necessary conversion. Persons per dwelling unit, by type of residential structure, are documented in Appendix C. For nonresidential development, trip generation rates by type of development are from the Institute of Transportation Engineers (ITE 2012) and discussed further in the street facilities section of this report. Updated development fees for police facilities are shown in the column with blue shading. The proposed fees are slightly less than current fees for all types of development, except single unit residential. Minor reductions in the fees are recommended to ensure projected development fee revenue does not exceed the growth cost of police facilities and to ensure the projected revenues are consistent with the residential and nonresidential proportionate share factors.

The cost of professional services related to preparation of the IIP and development fees is specifically authorized in Arizona's enabling legislation. As explained further in Appendix B the cost of professional service is allocated to the projected increase in service units over the next five years, which matches the mandatory update cycle for development fees.

Figure P4 – Police Service Units and Fees per Development Unit

Infrastructure Standards for Police	Vehicle and Equipment Cost	Professional Services	Revenue Credit	Net Cost
Residential (per person)	\$120.46	\$2.12	2%	\$120.12
Nonresidential (per vehicle trip)	\$7.07	\$0.10	1%	\$7.09

Residential (per housing unit)

Unit Type	Persons per Housing Unit	Police Fee	Current Fee	Increase / (Decrease)
Single Unit	2.83	\$339	\$252	\$87
2+ Units per Structure	1.61	\$193	\$199	(\$6)

Nonresidential

ITE Code	Type	Demand Unit	Weekday Vehicle Trip Ends	Trip Rate Adjustment Factors	Police Fee	Current Fee	Increase / (Decrease)
150	Industrial	1000 SF	3.56	50%	\$12	\$58	(\$46)
820	Commercial	1000 SF	42.70	33%	\$99	\$304	(\$205)
520	Institutional	1000 SF	15.43	33%	\$36	\$146	(\$110)
710	Office & Other Services	1000 SF	11.03	50%	\$39	\$146	(\$107)

Projected Revenue for Police Facilities

Appendix A contains the forecast of revenues required by Arizona's enabling legislation. Development fee revenue should match the need for growth-related infrastructure, which has a ten-year total cost of approximately \$2.6 million. Figure P5 indicates Glendale should receive approximately \$2.6 million in police development fee revenue over the next ten years, if actual development matches the land use assumptions documented in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the need for infrastructure and development fee revenue.

Figure P5 – Projected Police Development Fee Revenue

Ten-Year Growth Cost of Police Vehicles and Equipment => **\$2,617,000**

Police Impact Fee Revenue

		Single Unit	2+ Units	Industrial	Commercial	Institutional	Office & Other Services
		\$339	\$193	\$12	\$99	\$36	\$39
		per housing unit	per housing unit	per 1000 Sq Ft	per 1000 Sq Ft	per 1000 Sq Ft	per 1000 Sq Ft
		Hsg Units	Hsg Units	KSF	KSF	KSF	KSF
Base	2013	64,029	26,153	12,760	16,600	8,690	12,740
Year 1	2014	64,380	26,296	13,110	16,870	8,860	13,050
Year 2	2015	64,737	26,442	13,480	17,150	9,020	13,370
Year 3	2016	65,099	26,590	13,880	17,440	9,190	13,720
Year 4	2017	65,467	26,740	14,310	17,740	9,360	14,080
Year 5	2018	65,841	26,893	14,770	18,050	9,520	14,470
Year 6	2019	66,220	27,048	15,260	18,380	9,700	14,880
Year 7	2020	66,605	27,205	15,780	18,710	9,870	15,310
Year 8	2021	67,349	27,509	16,360	19,050	10,060	15,770
Year 9	2022	68,093	27,813	16,970	19,420	10,250	16,270
Year 10	2023	68,837	28,117	17,640	19,810	10,430	16,790
Ten-Yr Increase		4,808	1,964	4,880	3,210	1,740	4,050
Projected Revenue =>		\$1,630,000	\$379,000	\$59,000	\$318,000	\$63,000	\$158,000
Total Projected Revenues (rounded) =>						\$2,607,000	

FIRE FACILITIES IIP

ARS 9-463.05.T.7 (f) defines the fire facilities eligible for development fee funding.

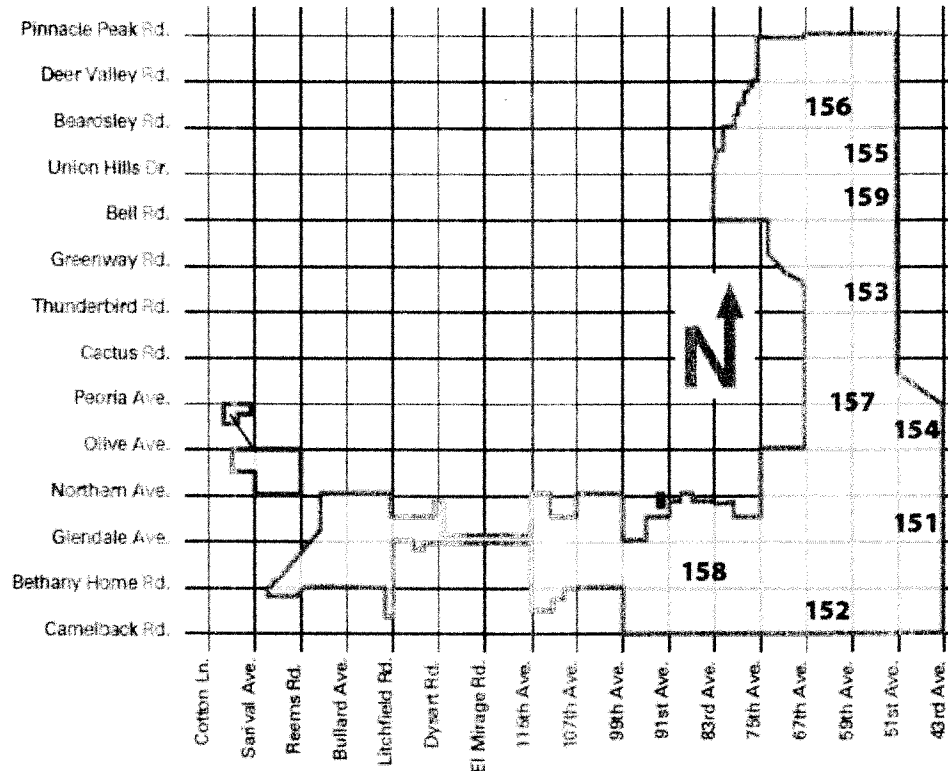
"Fire facilities, including all appurtenances, equipment and vehicles. Fire facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training officers from more than one station or substation."

The City of Glendale will use the incremental expansion method to derive development fees for fire stations, vehicles and equipment. The infrastructure improvements plan for fire stations and apparatus maintains current standards. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City's comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Fire Service Area

As shown in Figure F1, Glendale has nine existing fire stations, generally located in the East demographic area, with one station in the West 101 area. To hasten response times, fire and emergency medical response teams are dispatched from nearby stations, with multiple stations responding if warranted. Thus all developed areas within the City of Glendale are served by an integrated public safety system. The City of Glendale has one citywide service area for fire facilities.

Figure F1 – General Location of Existing Fire Station Locations



Proportionate Share

ARS 9-463.05.B.3 states that development fee shall not exceed a proportionate share of the cost of necessary public services needed to serve new development. In Glendale, fire infrastructure was allocated to 60% to residential and 40% nonresidential development based on 2012 calls for service, as provided by Glendale staff.

Existing Fire Infrastructure Standards

Figure F2 inventories existing fire stations in Glendale. The nine stations have an average floor area of approximately 11,600 square feet per station. For residential development, year-round persons are the service units. For nonresidential development, jobs are the service units in Glendale. Given the prevalence of emergency medical calls, the average number of residents and jobs per development unit provides a reasonable indicator of the relative demand for fire services.

For residential development, the City has provided 0.28 square feet of fire buildings for each person in East and West 101 Glendale. For nonresidential development, Glendale has provided 0.50 square feet of fire station for each job. The capital cost factors are derived by applying the proportionate share to the cost of additional building space (i.e. \$8.02 million for stations and land, as shown in Figure F4) and the ten-year increase in service units. For example, the capital cost for residential development is $0.60 \times \$8,020,200 / 16,727$ or \$287.68 per person (truncated).

Figure F2 – Glendale Fire Stations

Fire Stations	Square Feet
#	
151	13,261
152	13,789
153	8,281
154	9,470
155	8,278
156	6,738
157	16,000
158	14,768
159	13,712
TOTAL	104,297
Avg per Station =>	11,600

Allocation Factors

Cost per Square Foot	\$400
Residential Proportionate Share	60%
Nonresidential Proportionate Share	40%
East and West 101 Residents in 2013	222,749
MPA Jobs in 2013	84,176

Infrastructure Standards for Fire Stations

	Sq Ft	Cost
Residential (per person)	0.28	\$287.68
Nonresidential (per job)	0.50	\$120.69

Development fees will be used to expand the fleet of fire vehicles and purchase additional equipment that has a useful life of at least three years. Figure F3 lists fire vehicles and equipment currently used by the Glendale Fire Department. Items are ranked ordered by total cost (from most to least). Expensive fire apparatus accounts for most of the total cost, but the cumulative cost of portable radios is also significant at approximately \$3.6 million. In FY13-14, the Fire Department has 472 vehicles and equipment items, with a capital cost of approximately \$18.79 million. Glendale currently provides 1.3 fire vehicles/equipment items for every thousand residents and 2.2 fire vehicles/equipment items for every thousand jobs. The inventory below excludes vehicles used for administrative services. The capital cost factors are derived by applying the proportionate share to the cost of additional vehicles and/or equipment (i.e. \$32 million as shown in Figure F4) and then dividing by the ten-year increase in service units. For example, the capital cost for nonresidential development is $0.40 \times \$3,224,000 / 26,580$ or \$48.51 per job (truncated).

Figure F3 – Glendale Fire Vehicles and Equipment**Fire Vehicles and Equipment Inventory**

Type	Count	Unit Cost	Total Cost
Pumpers	10	\$540,000	\$5,400,000
Ladder Trucks	4	\$1,200,000	\$4,800,000
Portable Radios	428	\$8,500	\$3,638,000
Ladder Tenders	4	\$450,000	\$1,800,000
Hazmat Truck	1	\$650,000	\$650,000
Heavy Rescue Truck	1	\$650,000	\$650,000
Air and Light Truck	1	\$540,000	\$540,000
Water Tanker	1	\$340,000	\$340,000
Heavy Trucks	5	\$59,000	\$295,000
Heavy Utility Truck	1	\$215,000	\$215,000
Small Trucks	7	\$26,200	\$183,400
Brush Truck	1	\$120,000	\$120,000
Cars	6	\$17,200	\$103,200
Vans	2	\$28,800	\$57,600
TOTAL	472		\$18,792,200

Allocation Factors for Fire Vehicles and Equipment

Average Cost per Vehicle	\$39,800
Residential Proportionate Share	60%
Nonresidential Proportionate Share	40%
East and West 101 Residents in 2013	222,749
MPA Jobs in 2013	84,176

Infrastructure Standards for Fire Vehicles and Equipment

	Items	Cost
Residential (per person)	0.0013	\$115.64
Nonresidential (per job)	0.0022	\$48.51

Fire Infrastructure Needs

Arizona's development fee enabling legislation requires jurisdictions to convert land use assumptions into service units and the corresponding need for additional infrastructure over the next ten years. As shown in Figure F4, projected population and jobs drive the needs analysis for fire stations and vehicles/equipment. Glendale's ten-year plan for fire facilities is to provide approximately 17,872 additional square feet of fire stations. One additional station will be constructed in the West 101 area within the next five years and a land cost of \$435,600 per acre is included in the cost of this facility. The projected capital expenditure on additional fire vehicles or equipment items is \$3.2 million over the next ten years. In combination, Glendale anticipates capital costs of approximately \$11.24 million for growth-related fire infrastructure over the next ten years.

Figure F4 – Fire Facilities IIP and Cost Allocation

Fire Infrastructure Standards and Capital Costs

Fire Stations - Residential	0.28	Sq Ft per person
Fire Stations - Nonresidential	0.50	Sq Ft per job
Fire Stations Cost	\$400	per square foot
Fire Vehicles and Equipment - Residential	0.0013	per person
Fire Vehicles and Equipment - Nonresidential	0.0022	per job
Fire Vehicles and Equipment Cost	\$39,800	average per item

Fire Infrastructure Needs

	Year	East & West 101 Residents	Glendale MPA Jobs	Sq Ft of Fire Stations	Fire Vehicles and Equipment
Base	2013	222,749	84,176	104,297	472
Year 1	2014	223,971	86,220	105,653	478
Year 2	2015	225,212	88,369	107,067	485
Year 3	2016	226,473	90,633	108,544	491
Year 4	2017	227,753	93,022	110,087	498
Year 5	2018	229,051	95,549	111,704	506
Year 6	2019	230,370	98,225	113,401	513
Year 7	2020	231,711	101,067	115,186	521
Year 8	2021	234,299	104,089	117,411	531
Year 9	2022	236,888	107,312	119,736	542
Year 10	2023	239,476	110,756	122,169	553
Ten-Yr Increase		16,727	26,580	17,872	81

Cost of Fire Stations => \$7,149,000

Land Cost (two acres @\$435,600 per acre) => \$871,200

Cost of Fire Apparatus => \$3,224,000

Total Projected Expenditures (rounded) => \$11,244,200

Fire Development Fees

Infrastructure standards and cost factors for fire facilities are summarized in the upper portion of Figure F5. The conversion of infrastructure needs and costs per service unit into a cost per development unit is also shown in the table below. For residential development, average number of persons in a dwelling unit provides the necessary conversion. Persons per unit, by type of residential structure, are derived from 2010 census data (see the land use assumptions in Appendix C). For nonresidential development, average jobs per thousand square feet of floor area are derived from trip generation rates by type of development (see Figure C10 in the land use assumptions).

Updated development fees for fire facilities are shown in the column with light orange shading. Proposed fire development fees increase for residential development and all nonresidential development types, except institutional. To derive the proposed fee for residential development, multiply average persons per housing unit by the net cost per person. For example, the fire development fee for each dwelling in an apartment building would be $1.61 \times \$404.97$, or \$652 (truncated).

Figure F5 – Fire Fees per Development Unit

Infrastructure Standards for Fire

	Fire Stations	Fire Apparatus	Professional Services	Revenue Credit	Net Cost
Residential (per person)	\$287.68	\$115.64	\$1.65	0%	\$404.97
Nonresidential (per job)	\$120.69	\$48.51	\$0.61	0%	\$169.81

Residential (per Housing Unit)

Unit Type	Persons per HU	Proposed Fire Fee	Current Fee	Increase / (Decrease)
Single Unit	2.83	\$1,146	\$317	\$829
2+ Units per Structure	1.61	\$652	\$250	\$402

Nonresidential

ITE Code	Type	Development Unit	Jobs per Dev Unit*	Proposed Fire Fee	Current Fee	Increase / (Decrease)
150	Industrial	1000 SF	0.76	\$129	\$115	\$14
820	Commercial	1000 SF	1.41	\$239	\$200	\$39
520	Institutional	1000 SF	0.98	\$166	\$302	(\$136)
710	Office & Other Services	1000 SF	3.32	\$563	\$302	\$261

* Glendale Land Use Assumptions (see Figure C10).

Projected Revenue for Fire Facilities

Appendix A contains the forecast of revenues required by Arizona's enabling legislation. Development fee revenue should match the need for growth-related infrastructure, which has a ten-year total cost of approximately \$11.24 million. Figure F6 indicates Glendale should receive approximately \$10.76 million in fire development fee revenue over the next ten years, if actual development matches the land use assumptions documented in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the need for infrastructure and development fee revenue.

Figure F6 – Projected Fire Development Fee Revenue

Ten-Year Growth Cost of Fire Facilities => \$11,244,200

Fire Development Fee Revenue

		Single Unit	2+ Units	Industrial	Commercial	Institutional	Office & Other Services
		\$1,146 per housing unit	\$652 per housing unit	\$129 per 1000 Sq Ft	\$239 per 1000 Sq Ft	\$166 per 1000 Sq Ft	\$563 per 1000 Sq Ft
Year		Hsg Units	Hsg Units	KSF	KSF	KSF	KSF
Base	2013	64,029	26,153	12,760	16,600	8,690	12,740
Year 1	2014	64,380	26,296	13,110	16,870	8,860	13,050
Year 2	2015	64,737	26,442	13,480	17,150	9,020	13,370
Year 3	2016	65,099	26,590	13,880	17,440	9,190	13,720
Year 4	2017	65,467	26,740	14,310	17,740	9,360	14,080
Year 5	2018	65,841	26,893	14,770	18,050	9,520	14,470
Year 6	2019	66,220	27,048	15,260	18,380	9,700	14,880
Year 7	2020	66,605	27,205	15,780	18,710	9,870	15,310
Year 8	2021	67,349	27,509	16,360	19,050	10,060	15,770
Year 9	2022	68,093	27,813	16,970	19,420	10,250	16,270
Year 10	2023	68,837	28,117	17,640	19,810	10,430	16,790
Ten-Yr Increase		4,808	1,964	4,880	3,210	1,740	4,050
Projected Fees =>		\$5,510,000	\$1,281,000	\$630,000	\$767,000	\$289,000	\$2,280,000
						Total =>	\$10,757,000

WATER FACILITIES IIP

ARS 9-463.05.T.7 (a) defines the facilities and assets which can be included in the Water Facilities IIP.

"Water facilities, including the supply, transportation, treatment, purification and distribution of water, and any appurtenances for those facilities."

The Water Facilities IIP includes cost recovery for available surface water treatment capacity, plus planned improvements to major water lines and additional surface water supply. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City's comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Water Service Area and Service Units

Potable water is supplied via an interconnected grid to all areas of Glendale. New development in all areas of Glendale will benefit from the planned improvements. Glendale has one service area for water that covers the incorporated area east of 115th Avenue. Average day gallons of potable water are the service units for water development fees.

Water Connections and Demand

Annual increases and cumulative water demand data are shown in Figure W1. Data for the past three years are from Schedule 21 in the Comprehensive Annual Financial Report (6/30/13). Based on the projected increase in population and jobs in East and West 101 areas of Glendale, water system connections are expected to increase from 62,552 in 2013 to 71,735 in 2023.

From 2004 through 2012, Glendale delivered an average of 689 gallons per connection. TischlerBise assumed this average would hold constant over the next ten years. Based on the projected increase in connections, average daily water demand is expected to increase from 42.89 Million Gallons per Day (MGD) in 2013 to 49.19 MGD in 2023.

Figure W1– Projected Water Demand

Year		Water	Million Gallons	<u>Annual Increase</u>		<u>Cumulative Increase</u>	
		Connections	Per Avg Day	Connections	MGD	Connections	MGD
Past3	FY10-11	61,256	37.92				
Past2	FY11-12	61,478	42.95				
Past1	FY12-13	61,701	38.08				
Base	FY13-14	62,552	42.89				
Future1	FY14-15	63,415	43.48	863	0.59	863	0.59
Future2	FY15-16	64,289	44.08	875	0.60	1,737	1.19
Future3	FY16-17	65,176	44.69	887	0.61	2,624	1.80
Future4	FY17-18	66,075	45.31	899	0.62	3,523	2.42
Future5	FY18-19	66,986	45.93	911	0.62	4,434	3.04
Future6	FY19-20	67,910	46.57	924	0.13	5,358	3.67
Future7	FY20-21	68,847	47.21	937	0.13	6,295	4.32
Future8	FY21-22	69,796	47.86	950	0.13	7,244	4.97
Future9	FY22-23	70,759	48.52	963	0.13	8,207	5.63
Future10	FY23-24	71,735	49.19	976	0.13	9,183	6.30
Future11	FY24-25	72,724	49.87	989	0.14	10,172	6.98
Future12	FY25-26	73,727	50.56	1,003	0.14	11,175	7.66
Future13	FY26-27	74,744	51.25	1,017	0.14	12,192	8.36
Future14	FY27-28	75,775	51.96	1,031	0.14	13,223	9.07
Future15	F289-29	76,820	52.68	1,045	0.14	14,268	9.78
Future16	FY29-30	77,880	53.40	1,060	0.15	15,328	10.51
Future17	FY30-31	78,954	54.14	1,074	0.15	16,402	11.25

Glendale has adequate surface water treatment capacity to accommodate additional customers for more than ten years. As shown in Figure W2, the cost recovery is based on the cost per gallon of capacity, ensuring additional customers only pay for their proportionate share of available capacity. The net book value is from the FY2012 Comprehensive Annual Financial Report (see Section J in Notes to Financial Statements).

Figure W2 – Cost Recovery for Surface Water Treatment Capacity

Asset	Value
Oasis Surface Water Treatment Plant	\$71,800,000
Total	\$71,800,000
Average Day Gallons of Capacity	12,500,000
Cost Recovery per Gallon of Capacity	\$5.74
Ten-Year Growth Cost	\$36,144,000

Future Water Improvements

Figure W3 organizes infrastructure improvements into two general categories, with major water lines shown at the top and additional surface water supply shown at the bottom. The cost of water line extensions and oversizing was allocated to the projected increase in water demand over the next ten years (see Figure W1 above), yielding a cost of \$0.23 per gallon of capacity. Surface water supply is for a 100-year lease of 2,363 acre-feet per year, which is approximately 2.11 MGD, or \$3.07 per gallon of average day capacity.

Figure W3 – Water IIP

Major Water Lines

#	Description	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	FY20-24	Total Project
61027	Water Line Extension/Oversizing	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$750,000	\$1,500,000
								\$0
Total		\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$750,000	\$1,500,000
Ten-Year Increase in Gallons of Capacity per Day =>								6,300,000
Cost per Gallon of Capacity =>								\$0.23

Surface Water Supply

#	Description	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	FY20-24	Total Project
	White Mountain Apache Tribe 100-Year Lease (2,363 Ac-Ft/Yr)	\$6,490,580						\$6,490,580
Total		\$6,490,580	\$0	\$0	\$0	\$0	\$0	\$6,490,580
Increase in Average Day Gallons of Capacity =>								2,110,000
Cost per Gallon of Capacity =>								\$3.07

Water Development Fee

Figure W4 summarizes capital cost factors for the water system development fee. The first three line items are cost recovery and IIP costs discussed above. According to city staff, the current standard in Glendale is 140 gallons per person on an average day. With an average of 2.83 persons in a single unit dwelling, the Equivalent Dwelling Unit (EDU) demand is 396 gallons of water per day. The additional fee amounts for larger meters are derived using capacity ratios from the American Water Works Association.

As shown on the next page, projected revenue from water development fees is slightly less than the growth cost of water facilities over the next ten years, assuming a 23% reduction in the fees. Because the cost of additional surface water supply is only adequate to accommodate 3 years of projected development, water development fees could be higher for the next three years, and then decrease significantly. TischlerBise recommends lower fees that would remain stable by averaging the projected cost of surface water supply over ten years.

Figure W4 – Water Development Fees

Input Variables

	Cost per Gallon of Average Day Capacity	
Cost Recovery for Surface Water Treatment	\$5.74	
Major Water Lines IIP	\$0.23	
Surface Water Supply IIP	\$3.07	
Recommended Reduction	(\$2.08)	23%
Net Capital Cost per Gallon of Capacity	\$6.96	
IIP and Development Fee Preparation Cost per Meter =>	\$5.03	
Average Day Gallons of Capacity per EDU =>	396	

All Development Types (per meter)

Meter Size (inches)	Capacity Ratio*	Proposed Fee	Current Fee	\$ Change	Percent Change
0.75	1.00	\$2,761	\$3,420	(\$659)	-19%
1.00	1.67	\$4,607	\$5,820	(\$1,213)	-21%
1.50	3.33	\$9,183	\$11,290	(\$2,107)	-19%
2.00	5.33	\$14,695	\$18,130	(\$3,435)	-19%
3.00	10.67	\$29,413	\$37,630	(\$8,217)	-22%
4.00	16.67	\$45,950	\$58,160	(\$12,210)	-21%
6.00	33.33	\$91,867	\$113,930	(\$22,063)	-19%
8.00	53.33	\$146,991	\$171,070	(\$24,079)	-14%

* Source American Water Works Association, M6.

Forecast of Revenues for Water Facilities

Appendix A provides the forecast of revenues required by Arizona's enabling legislation.

Projected Revenue for Water Facilities

Over the next ten years, Glendale has a need for approximately \$44.1 million in growth-related water improvements, including \$36.1 million for surface water treatment, \$1.5 million for major water lines, and \$6.5 million for additional surface water supply. As shown at the bottom of Figure W5, projected water fee revenue of \$43.9 million, over the next ten years, is slightly less than the cost of growth-related water improvements.

Figure W5 – Water Fee Revenue Forecast

Ten-Year Growth-Related Costs for Water Facilities

Surface Water Treatment Cost Recovery	\$36,144,000
Major Water Lines IIP	\$1,500,000
Surface Water Supply IIP	\$6,491,000
Total	\$44,135,000

Water Development Fee Revenue

		Single Unit \$2,761 per Housing Unit	2+ Units and Nonresidential \$2,761 per EDU
		71% Single Units	Remaining EDUs
Base	2013	64,029	44,286
Year 1	2014	64,380	45,429
Year 2	2015	64,737	46,586
Year 3	2016	65,099	47,760
Year 4	2017	65,467	48,948
Year 5	2018	65,841	50,152
Year 6	2019	66,220	51,373
Year 7	2020	66,605	52,610
Year 8	2021	67,349	53,510
Year 9	2022	68,093	54,433
Year 10	2023	68,837	55,379
Ten-Yr Increase		4,808	11,093
Projected Fees =>		\$13,270,000	\$30,630,000
Total Projected Revenues (rounded) =>		\$43,900,000	

WASTEWATER FACILITIES IIP

ARS 9-463.05 T.7 (b) defines the facilities and assets included in the Wastewater Facilities IIP.

“Wastewater facilities, including collection, interception, transportation, treatment and disposal of wastewater, and any appurtenances for those facilities.”

The Wastewater Facilities development fee includes the growth-related cost of planned improvements, such as major sewer lines and a cost recovery component for available capacity in wastewater treatment plants. Development fees in Glendale exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City’s comprehensive Capital Improvement Plan (CIP) addresses the cost of these excluded items.

Wastewater Service Area

Glendale currently has one sewer fee schedule for all development east of 115th Avenue. TischlerBise recommends continuation of this approach. As documented in the sewer master plan (CDM 2008), Glendale has constructed interconnections that allow wastewater flow to be adjusted between the three major water reclamation facilities. The collection system in the lower (southern) portion of Glendale has an east-west interconnection in Camelback Road and there is another interconnection via the 99th Avenue Interceptor.

Projected Connections and Wastewater Flow

Past data on sewer connections and annual wastewater flow, from Glendale’s Comprehensive Annual Financial Report (Schedule 21, 6/30/13), are shown at the top of Figure WW1. Using the compound annual growth rate for projected residents and jobs in the utility service area (i.e. East and West 101 areas of Glendale), TischlerBise projected sewer connections to 2030.

From 2004 through 2012, the average wastewater flow was 316 gallons per connection. TischlerBise assumed this average would hold constant over the next ten years. Based on the projected increase in sewer connections, average daily wastewater flow is expected to increase from 18.44 Million Gallons per Day (MGD) in 2013 to 21.15 MGD in 2023.

Figure WW1 – Sewer Connections and Average Day Gallons

Year		Sewer Connections	Million Gallons Per Avg Day	Annual Increase		Cumulative Increase	
				Connections	MGD	Connections	MGD
Past3	FY10-11	57,087	14.60				
Past2	FY11-12	57,300	15.60				
Past1	FY12-13	57,517	18.19				
Base	FY13-14	58,310	18.44				
Future1	FY14-15	59,115	18.69	804	0.25	804	0.25
Future2	FY15-16	59,930	18.95	815	0.26	1,620	0.51
Future3	FY16-17	60,756	19.21	827	0.26	2,446	0.77
Future4	FY17-18	61,594	19.48	838	0.26	3,284	1.04
Future5	FY18-19	62,444	19.75	850	0.27	4,134	1.31
Future6	FY19-20	63,305	20.02	861	0.05	4,995	1.58
Future7	FY20-21	64,178	20.30	873	0.06	5,868	1.86
Future8	FY21-22	65,063	20.58	885	0.06	6,753	2.14
Future9	FY22-23	65,961	20.86	897	0.06	7,650	2.42
Future10	FY23-24	66,871	21.15	910	0.06	8,560	2.71
Future11	FY24-25	67,793	21.44	922	0.06	9,483	3.00
Future12	FY25-26	68,728	21.73	935	0.06	10,418	3.29
Future13	FY26-27	69,676	22.03	948	0.06	11,365	3.59
Future14	FY27-28	70,637	22.34	961	0.06	12,326	3.90
Future15	F289-29	71,611	22.65	974	0.06	13,301	4.21
Future16	FY29-30	72,599	22.96	988	0.06	14,288	4.52
Future17	FY30-31	73,600	23.27	1,001	0.06	15,290	4.84

Existing Wastewater Facilities

Glendale currently has three major treatment plants, each with adequate capacity to accommodate development for more than ten years. Because the City has oversized these facilities in anticipation of growth, new customers will pay their proportionate share per gallon of capacity consumed. The rationale for recoupment, often called cost recovery, is that new development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which new growth will benefit. This methodology is commonly used for utility systems that must provide adequate capacity before new development can take place. As shown at the bottom of Figure WW2, the cost of \$5.80 per average day gallon of capacity is based on Glendale's most recent expansion of the West Area Water Reclamation Facility (WRF). Over the next ten years, Glendale will recover \$15.7 million for treatment plant capacity.

Figure WW2 – Cost Recovery for Water Reclamation Facilities**Glendale Wastewater Treatment Plants**

Facility	Average Day Flow (gallons in millions)	Capacity (gallons in millions)
Arrowhead Water Reclamation Facility	2.6	4.5
West Area Water Reclamation Facility	5.5	11.5
91st Avenue WWTP (Glendale share of SROG)	8.0	13.2

Cost Recovery per Gallon of Capacity**2005 Expansion**

West Area WRF Cost	\$40,600,000
Additional Capacity (avg day gallons)	7,000,000
Cost per Gallon of Capacity	\$5.80

Ten-Year Growth Cost => \$15,701,000

Future Wastewater Improvements

As shown in Figure WW3, Glendale anticipates relatively minor expenditures on the sewer collection system over the next ten years. Expenditures include a major sewer line along Glendale Avenue, from 93rd to 99th, and minor extensions of sewer lines, or developer reimbursements for sewer line oversizing.

Figure WW3 – Wastewater Collections System Expenditures**Wastewater Collection System**

#	Description	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	FY20-24	Total Project
63017	Sewer Line Extension/Oversizing	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$800,000	\$1,600,000
T3611	Glendale Ave, 93rd-99th Ave						\$1,118,591	\$1,118,591

Total \$160,000 \$160,000 \$160,000 \$160,000 \$160,000 \$160,000 \$1,918,591 \$2,718,591

Ten-Year Increase in Gallons of Capacity per Day => 2,710,000

Cost per Gallon of Capacity => \$1.00

Wastewater Development Fees

Proposed development fees for wastewater facilities are shown in Figure WW4. The proposed fee is equal to the net capital cost per gallon of capacity multiplied by the EDU demand factor of 288 gallons of wastewater flow on an average day. For meters larger than 0.75 inches, a capacity ratio converts the fee per EDU to a proportionate fee based on hydraulic capacity. Proposed fees are three times higher than current fees, but still lower than the wastewater development fees in most Phoenix-area jurisdictions. For example, the 2012 sewer fee for the smallest meter size is \$5,493 in Avondale, \$4,193 in Glendale, and \$1,923 in Peoria.

Figure WW4 – Wastewater Development Fee Schedule

<i>Input Variables</i>	<i>Cost per Gallon of Average Day Capacity</i>	
Wastewater Treatment Capacity Cost Recovery	\$5.80	
Wastewater Collection System IIP	\$1.00	
Revenue Credit	(\$0.07)	1%
Net Capital Cost per Gallon of Capacity	\$6.73	
Professional Services Cost per Meter =>	\$5.39	
Average Day Gallons of Capacity per EDU =>	288	

All Development Types (per meter)

<i>Meter Size (inches)</i>	<i>Capacity Ratio*</i>	<i>Proposed Fee</i>	<i>Current Fee</i>	<i>\$ Change</i>	<i>Percent Change</i>
0.75	1.00	\$1,944	\$480	\$1,464	305%
1.00	1.67	\$3,243	\$820	\$2,423	295%
1.50	3.33	\$6,462	\$1,590	\$4,872	306%
2.00	5.33	\$10,341	\$2,550	\$7,791	306%
3.00	10.67	\$20,696	\$5,290	\$15,406	291%
4.00	16.67	\$32,331	\$8,170	\$24,161	296%
6.00	33.33	\$64,637	\$16,000	\$48,637	304%
8.00	53.33	\$103,420	\$24,030	\$79,390	330%

* Source American Water Works Association, M6.

Forecast of Revenues for Wastewater Facilities

Appendix A provides the forecast of revenues required by Arizona's enabling legislation.

Projected Revenue for Wastewater Facilities

Over the next ten years, Glendale's growth cost for wastewater facilities includes a \$15.7 million cost recovery for wastewater treatment capacity and \$2.7 million for expansion of the wastewater collection system. As shown at the bottom of Figure WW5, projected sewer fee revenue of \$18.27 million, over the next ten years, is slightly less than the growth cost of wastewater facilities.

Figure WW5 – Sewer Fee Revenue Forecast

Ten-Year Growth Costs for Wastewater Facilities

Wastewater Treatment Cost Recovery	\$15,701,000
Wastewater Collection System IIP	\$2,719,000
Total	\$18,420,000

Projected Wastewater Development Fee Revenue

		Single Unit \$1,944 per Housing Unit	2+ Units and Nonresidential \$1,944 per EDU
		71% Single Units	Remaining EDUs
Base	2013	64,029	0
Year 1	2014	64,380	530
Year 2	2015	64,737	1,069
Year 3	2016	65,099	1,614
Year 4	2017	65,467	2,166
Year 5	2018	65,841	2,725
Year 6	2019	66,220	3,292
Year 7	2020	66,605	3,866
Year 8	2021	67,349	4,093
Year 9	2022	68,093	4,335
Year 10	2023	68,837	4,590
Ten-Yr Increase		4,808	4,590
Projected Fees =>		\$9,350,000	\$8,920,000
Total Projected Revenues (rounded) =>		\$18,270,000	

APPENDIX A – FORECAST OF REVENUES

The “Required Offset” percentage reduction is a placeholder that will be discussed in more detail at a later date. Arizona’s enabling legislation requires municipalities to forecast the revenue contribution to be made in the future towards capital costs and shall include these contributions in determining the extent of burden imposed by development. TischlerBise will likely recommend a small percentage reduction in development fees to satisfy the “required offset,” which is a phrase taken directly from the enabling legislation (quoted below).

9-463.05.E.7. “A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development as required in subsection B, paragraph 12 of this section.”

9-463.05.B.12. “The municipality shall forecast the contribution to be made in the future in cash or by taxes, fees, assessments or other sources of revenue derived from the property owner towards the capital costs of the necessary public service covered by the development fee and shall include these contributions in determining the extent of the burden imposed by the development. Beginning August 1, 2014, for purposes of calculating the required offset to development fees pursuant to this subsection, if a municipality imposes a construction contracting or similar excise tax rate in excess of the percentage amount of the transaction privilege tax rate imposed on the majority of other transaction privilege tax classifications, the entire excess portion of the construction contracting or similar excise tax shall be treated as a contribution to the capital costs of necessary public services provided to development for which development fees are assessed, unless the excess portion was already taken into account for such purpose pursuant to this subsection.”

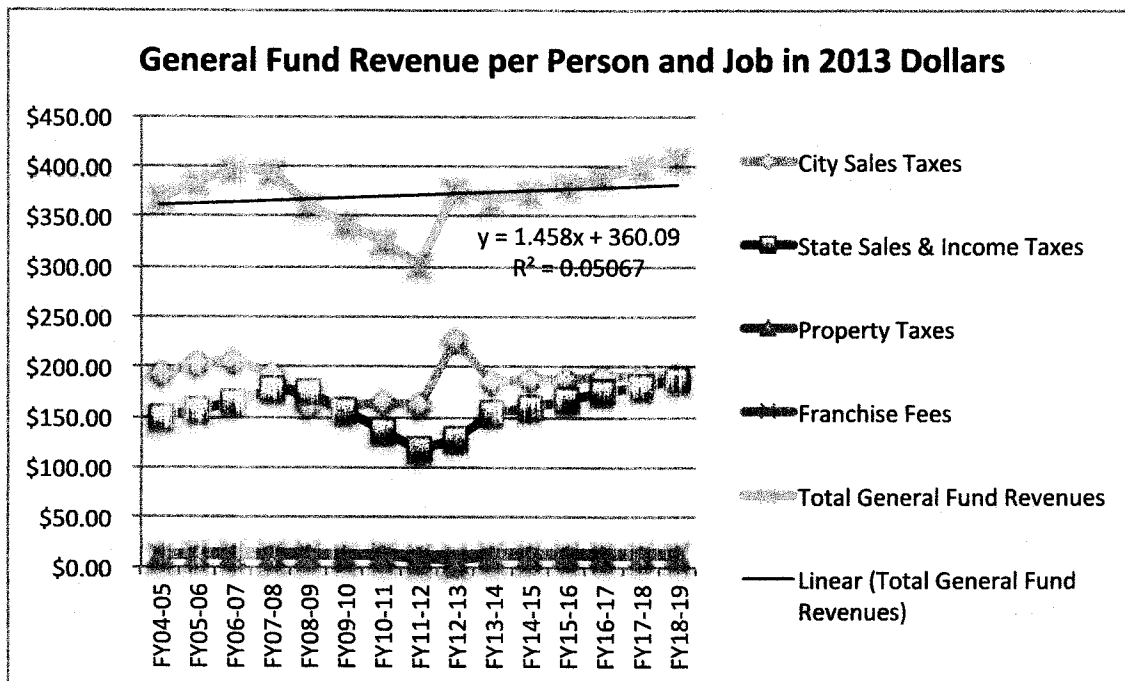
Glendale does not have a higher than normal construction excise tax rate, so the required offset described above is not applicable. The required forecast of non-development fee revenue that might be used for growth-related capital costs is shown in Figure A1. General Fund revenues are highlighted in light purple. Highway User Taxes are highlighted light grey and Water and Sewer Revenue is highlighted light blue. The forecast of revenues was derived from a linear regression analysis, with projected population plus jobs as the independent variable. Glendale staff provided historical revenues for the past nine fiscal years. Projected population plus jobs, for the entire Municipal Planning Area, are documented in the land use assumptions.

Figure A1 – Five-Year Revenue Projections

Forecast of Revenues in Nominal Dollars						
Glendale, AZ	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
City Sales Taxes	\$58,162,875	\$59,292,410	\$60,461,869	\$61,674,974	\$62,933,984	\$64,242,711
State Sales & Income Taxes	\$48,108,310	\$50,725,699	\$53,435,600	\$56,246,638	\$59,164,048	\$62,196,663
Property Taxes	\$3,622,836	\$3,704,024	\$3,788,082	\$3,875,276	\$3,965,771	\$4,059,839
Franchise Fees	\$4,216,947	\$4,308,696	\$4,403,686	\$4,502,223	\$4,604,487	\$4,710,790
Total General Fund Revenues	\$114,110,969	\$118,030,829	\$122,089,238	\$126,299,112	\$130,668,290	\$135,210,003
	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
Highway User Taxes	\$14,911,295	\$15,306,077	\$15,714,813	\$16,138,803	\$16,578,838	\$17,036,248
	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
Water and Sewer Revenue	\$63,703,274	\$63,187,092	\$62,652,666	\$62,098,295	\$61,522,945	\$60,924,876

Figure A2 indicates past and future General Fund revenue converted to constant 2013 dollars, to account for inflation, and then divided by persons plus jobs in Glendale, to account for growth. Total General Fund revenue increases slightly over time, primarily due to a projected increase in State sales and income taxes, which are not controlled by the City. The projected increase in General Fund revenue will likely be offset by an increase in operating, maintenance, and replacement capital costs.

Figure A2 – Graph of General Fund Revenues



The methodology described above was also applied to Highway User Tax revenue, with the results graphed in Figure A3. The gas-tax funding pattern in Glendale has shown a consistent decline, when measured in constant dollars and normalized by the increase in population and jobs. Essentially, Glendale has increasing traffic but decreasing dollars to use for maintenance of existing street facilities.

Figure A3 – Graph of Highway User Fund Revenue

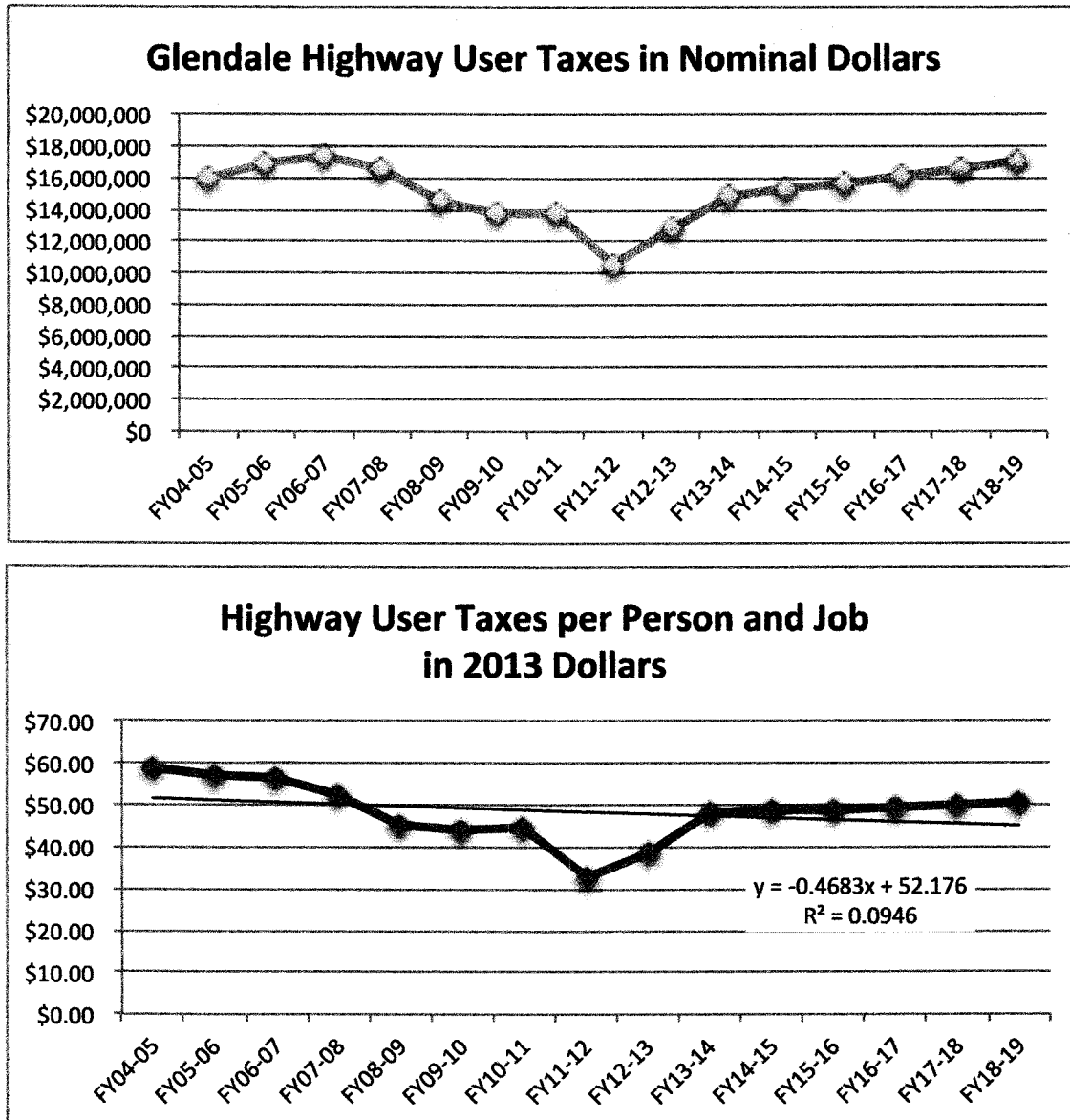
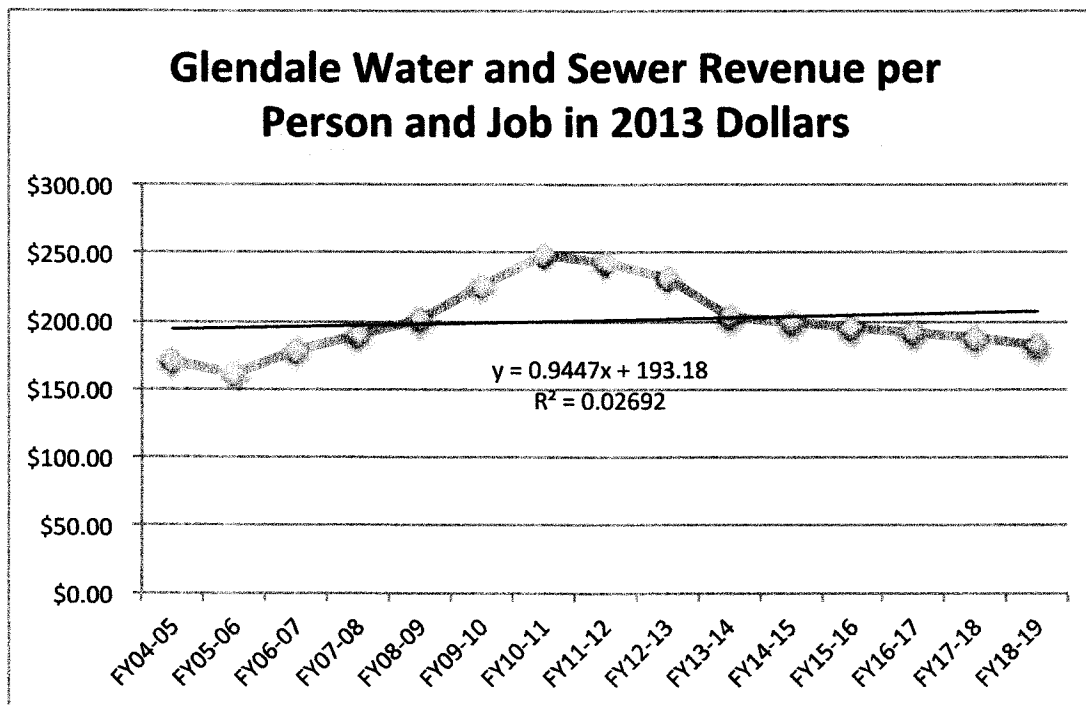


Figure A4 indicates water and sewer revenue in 2013 dollars, normalized to account for Glendale's population and job growth over time. Water and sewer revenue has remained stable over time.

Figure A4 – Graph of Utility Fund Revenue



APPENDIX B – COST OF PROFESSIONAL SERVICES

As stated in Arizona's development fee enabling legislation, "a municipality may assess development fees to offset costs to the municipality associated with providing necessary public services to a development, including the costs of infrastructure, improvements, real property, engineering and architectural services, financing and professional services required for the preparation or revision of a development fee pursuant to this section, including the relevant portion of the infrastructure improvements plan" (see 9-463.05.A). Because development fees must be updated at least every five years, the cost of professional services is allocated to the projected increase in units over five years. Qualified professionals must develop the IIP, using generally accepted engineering and planning practices. A qualified professional is defined as "a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person's license, education or experience".

Figure B1 – Cost of Professional Services

Necessary Public Service	Cost	Demand Indicator	Proportionate Share	Cost Allocation				Cost per Demand Unit
				Units	2013	2018	Increase	
Water	\$22,318	All Development	100%	Connections	62,552	66,986	4,434	\$5.03
Wastewater	\$22,318	All Development	100%	Connections	58,310	62,444	4,134	\$5.39
Parks and Recreation	\$19,838	Residential	89%	East & West 101 Residents	222,749	229,051	6,302	\$2.80
		Nonresidential	11%	East & West 101 Jobs	72,963	81,840	8,877	\$0.24
Police	\$17,359	Residential	77%	East & West 101 Residents	222,749	229,051	6,302	\$2.12
		Nonresidential	23%	Avg Wkdy Veh Trips to MPA Nonres	371,133	408,910	37,777	\$0.10
Fire	\$17,359	Residential	60%	East & West 101 Residents	222,749	229,051	6,302	\$1.65
		Nonresidential	40%	MPA Jobs	84,176	95,549	11,373	\$0.61
Streets	\$24,798	All Development	100%	Avg Wkdy VMT	4,574,953	4,887,048	312,095	\$0.07
TOTAL					\$123,990			

APPENDIX C – GLENDALE LAND USE ASSUMPTIONS

For municipalities in Arizona, the state enabling legislation now requires supporting documentation on land use assumptions, a plan for infrastructure improvements, and development fee calculations. This document contains the land use assumptions for the City of Glendale 2014 development fee update. Development fees must be updated every five years, making short-range projections the critical time frame. The Infrastructure Improvements Plan (IIP) is limited to ten years, thus a very long-range “build-out” analysis may not be used to derive development fees.

Arizona Revised Statutes (ARS) 9-463.05.T.6 requires the preparation of a Land Use Assumptions indicating,

“Projections of changes in land uses, densities, intensities and population for a specified service area over a period of at least ten years and pursuant to the General Plan of the municipality.”

TischlerBise prepared current demographic *estimates* and future development *projections* for both residential and nonresidential development that will be used in the IIP and calculation of the development fees. Demographic data for FY13-14 (beginning July 1, 2013) are used in calculating levels-of-service (LOS) provided to existing development in the City of Glendale. Although long-range projections are necessary for planning infrastructure systems, a shorter time frame of five to ten years is critical for the impact fees analysis. Due to the slow recovery from the Great Recession, TischlerBise used compound growth rates to produce conservative initial projections that increase over time.

Summary of Growth Indicators

Development projections and growth rates are summarized in Figure C1. These projections will be used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure. However, impact fees methodologies are designed to reduce sensitivity to precise development projections in the determination of the proportionate-share fee amounts. If actual development is slower than projected, impact fees revenues will also decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, the City will receive an increase in impact fee revenue, but will also need to accelerate capital improvements to keep pace with development.

Development projections are based on Maricopa Association of Governments socioeconomic data by traffic analysis zone (MAG, June 2013). TischlerBise used MAG’s housing unit and employment data for 2010, 2020, and 2030 for the Municipal Planning Area (MPA). Housing data were converted to resident population and job data were converted to nonresidential floor area.

Land use assumptions assume the City of Glendale will continue to annex land as development occurs, with the incorporated area expanding over time to eventually approximate the municipal planning area. TischlerBise derived interim year data between 2010 and 2020 using compound growth rates, thus yielding annual increments that increase over time. During the next five years, the development fee study assumes an average increase of 733 housing units per year (compound annual growth rate of 0.7%). In comparison, over the past five years Glendale issued building permits for an average of 252 housing units per year.

Because MAG assumed a higher rate of job growth during the first decade (2010-2020) than in the second decade (2020-2030), TischlerBise used 2010 and 2030 employment data, with interim years derived from compound growth rates. Over the next five years, the development fee study expects Glendale to add nonresidential floor area averaging 1.2 million square feet per year (compound annual increase of 2.3%). Over the past five years, Glendale issued building permits averaging 870,000 square

feet of nonresidential construction per year. (Note: MPA = Municipal Planning Area and KSF = Square Feet of nonresidential floor area in thousands.)

Figure C1 – Municipal Planning Area Projections and Growth Rates

Based on socioeconomic data by traffic analysis zone, Maricopa Association of Governments (June 2013).

Year	MPA Total as of July 1st	
	Dwelling Units	Nonres Sq Ft in thousands
2013	100,793	50,790
2014	101,502	51,890
2015	102,223	53,020
2016	102,956	54,230
2017	103,701	55,490
2018	104,459	56,810
2023	110,985	64,670

Glendale, AZ		Annual Increase	
Timeframe	Dwelling Units	Nonres Sq Ft x 1000	
2008 CY permits	318	1,787	
2009 CY permits	465	579	
2010 CY permits	82	559	
2011 CY permits	115	357	
2012 CY permits	282	1,066	

7/13-7/14	709	1,100
7/14-7/15	721	1,130
7/15-7/16	733	1,210
7/16-7/17	745	1,260
7/17-7/18	758	1,320

2013 to 2018 Avg Annual		
	Increase	Compound Growth Rate
Residential Units	733	0.7%
Nonresidential Sq Ft x 1000	1,204	2.3%

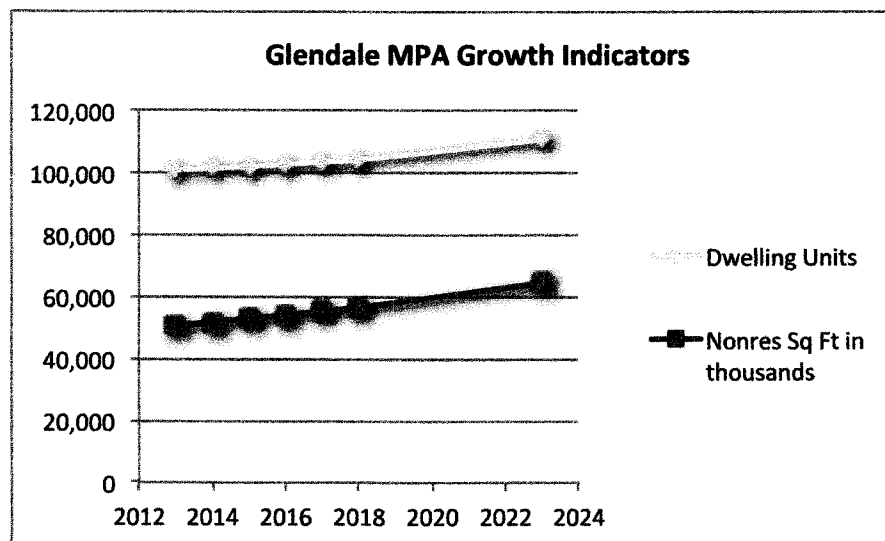


Figure C2 provides additional detail on the annual increases in demand indicators (change from July 1st to July 1st of the next year). Single-unit housing tends to be the most consistent type of development from year to year. In contrast, apartments and all nonresidential development vary significantly over time. The City of Glendale will closely monitor actual development each year. If needed, development fees can be updated prior to the required five-year cycle.

Note: Please see Figure C10 and related text for additional information on types of nonresidential development. Resident population excludes group quarters, such as prisons and dormitories.

Figure C2 – Projected Annual Increases for the Glendale MPA

Annual Increase	7/13-7/14	7/14-7/15	7/15-7/16	7/16-7/17	7/17-7/18	7/18-7/19	2013-2023
							Avg Anl
Resident Population	1,751	1,780	1,812	1,841	1,871	1,904	2,517
Housing Units	709	721	733	745	758	771	1,019
Jobs	2,044	2,149	2,264	2,389	2,526	2,676	2,658
Industrial KSF	350	370	400	430	460	490	488
Commercial KSF	270	280	290	300	310	330	321
Institutional KSF	170	160	170	170	160	180	174
Office & Other KSF	310	320	350	360	390	410	405
Total Nonres KSF/Yr =>	1,100	1,130	1,210	1,260	1,320	1,410	1,388

Service Areas

ARS 9-463.05.T.9 defines "service area" as,

"Any specified area within the boundaries of a municipality in which development will be served by necessary public services or facility expansions and within which a substantial nexus exists between the necessary public services or facility expansions and the development being served as prescribed in the infrastructure improvements plan."

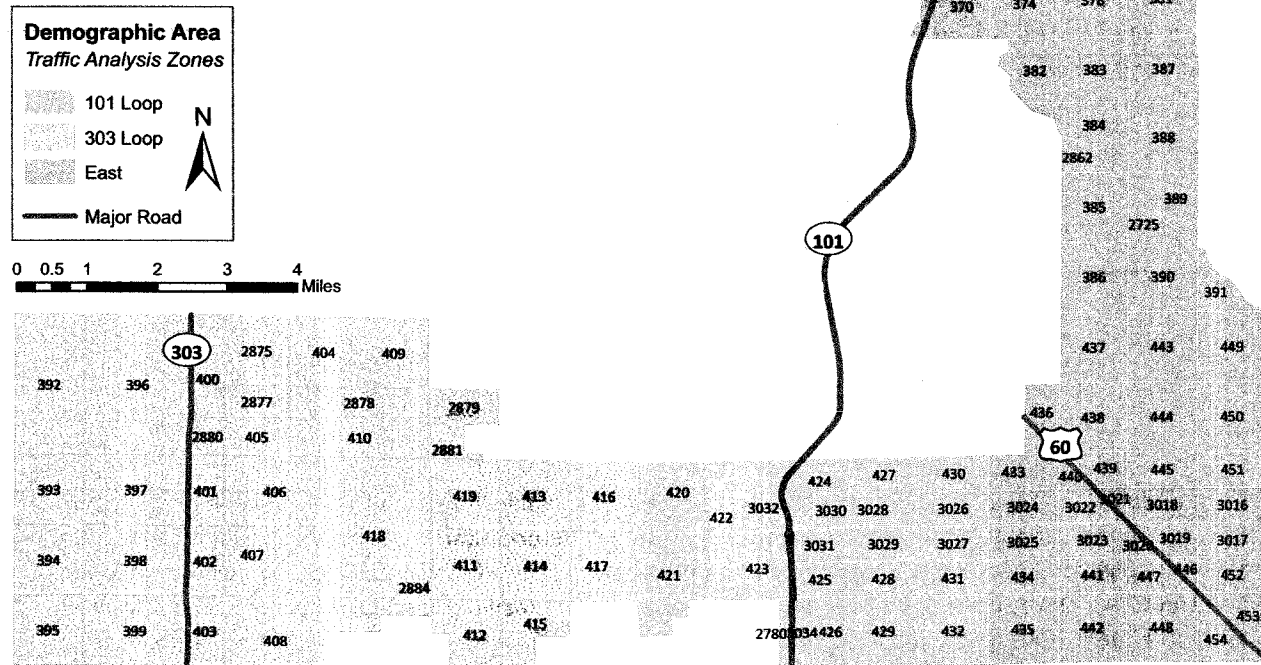
Arizona's development fee legislation includes detailed definitions of the types of infrastructure that are considered to be "necessary public services." In the City of Glendale, all development fees are currently imposed citywide. To provide demographic data for the demand analysis required for development fees, TischlerBise tabulated population, housing units, jobs, and nonresidential floor area by three demographic areas, as described in the table below.

Demographic Area	Description
East	North and Central area east of 75 th Ave
101 Loop	East of 115 th Ave and west of 75 th Ave
303 Loop	West of 115 th Ave

The rationale for these sub-areas and their applicability to each type of infrastructure will be further discussed in the Infrastructure Improvements Plan (IIP). The boundaries of the demographic areas are shown in Figure C3. TischlerBise recommends continuation of citywide fees for police and fire infrastructure. Development fees for parks and recreational facilities exclude the West 303 sub-area, where Glendale does not expect significant residential annexations and the need for improvements from nonresidential is relatively minor. For street facilities, Glendale created separate IIPs and fee schedules for each geographic area. For water and sewer facilities, the service area is limited by the geographic extent of utility lines, with no service expected west of 115th Avenue.

Figure C3 - Map of Glendale Demographic Areas

Demographic Areas: Glendale, Arizona



Prepared for Glendale, Arizona by TischlerBise

According to the latest socioeconomic data by traffic analysis zone (MAG, June 2013), all three areas are expected to experience similar housing unit increases over the next five years. In the east, residential development will be a combination of infill and redevelopment. The 101 Loop has vacant and agricultural land that can accommodate new housing that will be served by City water and sewer utilities. The far west, 303 Loop will not be served by Glendale water and sewer utilities. As shown in Figure C4, the large existing base of housing units in the East yields a much lower percentage growth rate, even though the absolute increase is similar to the areas in west Glendale.

Figure C4 - Dwelling Units by Demographic Area

	Dwelling Units			Annual Growth (compound)
	2013	2018	Increase	
East	81,085	82,338	1,252	0.3%
101 Loop	9,096	10,396	1,299	2.7%
303 Loop	10,611	11,726	1,115	2.0%
	Total		3,666	

Source: Based on MAG socioeconomic data
by traffic analysis zone (June 2013).

As shown in Figure C5, almost all of the current industrial floor area in Glendale is located in the east demographic area. Similar increases in industrial jobs and floor area are expected in all three demographic areas over the next five years.

Figure C5 - Industrial Floor Space by Demographic Area

	Industrial Square Feet of Floor Area (in thousands)			Annual Growth (compound)
	2013	2018	Increase	
East	10,230	10,860	630	1.2%
101 Loop	1,760	2,410	650	6.5%
303 Loop	770	1,500	730	14.3%
	Total		2,010	

Source: Based on MAG socioeconomic data
by traffic analysis zone (June 2013).

All other types of nonresidential floor space (i.e. commercial, institutional, and office & other services), by demographic area, are shown in Figure C6. Although these types of nonresidential buildings tend to follow residential development, nonresidential development in the East demographic area is expected to remain strong for the next five years. The 101 Loop has the second largest increase in all other types of nonresidential development. Even in the 303 Loop, all other types of nonresidential development is expected to increase by 750,000 square feet over the next five years.

Figure C6 - All Other Nonresidential by Demographic Area

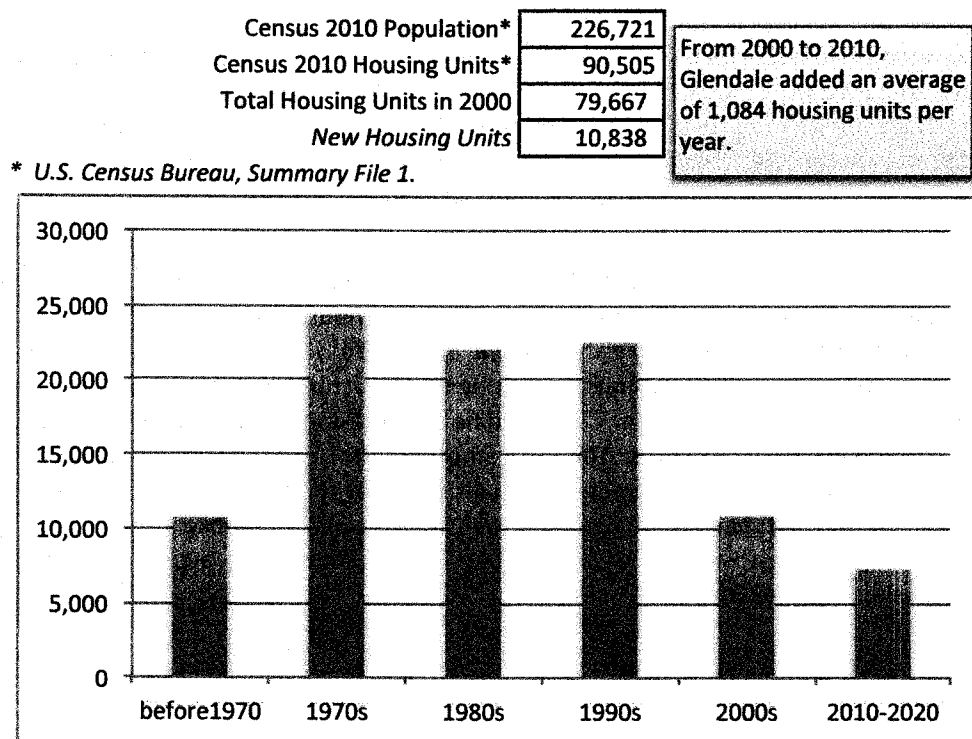
All Other Nonresidential	Square Feet of Floor Area (in thousands)			Annual Growth (compound)
	2013	2018	Increase	
East	30,670	32,600	1,930	1.2%
101 Loop	3,420	4,750	1,330	6.8%
303 Loop	3,940	4,690	750	3.5%
	Total		4,010	

Source: Based on MAG socioeconomic data
by traffic analysis zone (June 2013).

Residential Development

Current estimates and future projections of residential development are detailed in this section, including population and housing units by type. From 2000 to 2010, Glendale increased by an average of 1,084 housing units per year. Figure C7 indicates the estimated number of housing units added by decade in Glendale. Consistent with the nationwide decline in development activity, residential construction in the City slowed significantly since 2008. For comparison, the projected increase in dwelling units over the next decade is also shown on the graph.

Figure C7 – Housing Units by Decade



Source for 1990s and earlier is Table B25034, American Community Survey, 2011. scaled to equal total housing units in 2000. Projected housing unit increase from 2010 to 2020 is based on MAG Draft 3 socioeconomic data (May 2013).

Persons per Housing Unit

The 2010 census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). For development fees in Glendale, “single-unit” residential includes detached units (both site-built and manufactured) and townhouses that share a common sidewall, but are constructed on an individual parcel of land. The second residential category includes all structures with two or more units on an individual parcel of land.

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. When persons per housing unit are used in the fee calculations, infrastructure standards are derived using year-round population. When persons per household are used in the fee calculations, the impact fee methodology assumes all housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards.

TischlerBise recommends that impact fees for residential development in the City of Glendale be imposed according to the number of year-round residents per housing unit. For the development fee calculations, TischlerBise used the ACS results shown at the top of Figure C8 to indicate the relative number of persons per housing unit, by units in a residential structure, and the housing mix in Glendale. Over the next five years, the housing stock in Glendale should remain approximately 71% single units and 29% two or more units per structure. The ACS sample results by residential category were adjusted to yield the 2010 census counts for resident population, households, and housing units. In 2010, dwellings with a single unit per structure (detached, attached, and mobile homes) averaged 2.83 persons per housing unit. Dwellings in structures with multiple units averaged 1.61 year-round residents per housing unit in 2010.

Figure C8 – Year-Round Persons per Unit by Type of Housing**2011 Summary by Type of Housing from American Community Survey**

Units in Structure	Renter & Owner			Housing Units	Persons per Housing Unit
	Persons	House-holds	Persons per Household		
Single Unit*	183,638	58,538	3.14	65,528	2.80
2+ Units	43,748	20,661	2.12	27,361	1.60
Subtotal	227,386	79,199	2.87	92,889	2.45
Group Quarters	3,080				
TOTAL	230,466			92,889	2.48

Source: Tables B25024, C25032, C25033, and B26001.

* Single unit includes detached, attached, and mobile homes.

One-Year Estimates, 2011 American Community Survey, U.S. Census Bureau.

2010 Census Counts

Units in Structure	Renter & Owner			Housing Units	Persons per Housing Unit
	Persons	House-holds	Persons per Household		
Single Unit	180,471	58,475	3.09	63,846	2.83
2+ Units	42,993	20,639	2.08	26,659	1.61
Subtotal	223,464	79,114	2.82	90,505	2.47
Group Quarters	3,257				
TOTAL	226,721			90,505	

Demographic data shown in Figure C9 provide key inputs for updating development fees in the City of Glendale. The municipal planning area is larger than the city limits, but the difference will decrease over time as the City continues to annex additional land area. Starting with 2010 and 2020 socioeconomic data by traffic analysis zone (MAG, June 2013), TischlerBise derived the interim year data using exponential growth formulas. This approach provides more conservative short-range projections, with annual increases growing larger over time. From 2020 to 2030, TischlerBise derived the interim year housing unit increase from the average annual change over the decade. In 2010, approximately 13% of the housing stock in Glendale was vacant or used by seasonal residents, with an average of 2.47 persons per housing unit. In contrast to the MAG socioeconomic data that assumes a significant increase to 2.75 persons per housing unit by 2020, the land use assumptions derive resident population from projected dwelling units assuming a constant 2.47 persons per housing unit.

Figure C9 – Glendale MPA Residential Development

Glendale Municipal Planning Area	FY13-14 2013 Base Yr	FY14-15 2014 1	FY15-16 2015 2	FY16-17 2016 3	FY17-18 2017 4	FY18-19 2018 5	FY23-24 2023 10
Resident Population by Area							
East	200,281	200,895	201,512	202,131	202,752	203,374	208,285
303 Loop	26,210	26,739	27,278	27,829	28,390	28,963	34,657
101 Loop	22,468	23,076	23,700	24,342	25,001	25,677	31,191
Total MPA Pop (Yr-Rd)	248,959	250,710	252,490	254,302	256,143	258,014	274,133
Dwelling Units by Area							
East	81,085	81,334	81,584	81,834	82,086	82,338	84,326
303 Loop	10,611	10,825	11,044	11,267	11,494	11,726	14,031
101 Loop	9,096	9,342	9,595	9,855	10,122	10,396	12,628
Total MPA Dwelling Units	100,793	101,502	102,223	102,956	103,701	104,459	110,985
Persons per Housing Unit	2.47	2.47	2.47	2.47	2.47	2.47	2.47

Nonresidential Development

In addition to data on residential development, the infrastructure improvements plan and development fees require data on nonresidential development in Glendale. Current estimates and future projections of nonresidential development are detailed in this section, including jobs and floor area by type. TischlerBise uses the term "jobs" to refer to employment by place of work.

Jobs by Type of Nonresidential Development

Figure C10 indicates 2012 job and floor area estimates for the City of Glendale, according to four general types of nonresidential development. For industrial and commercial development, floor area estimates were obtained from Costar. For institutional development and office/other services, TischlerBise estimated floor area using average square feet per job multipliers derived from trip generation data published by the Institute of Transportation Engineers (see Trip Generation, 2012). For future industrial development, warehousing (ITE 150) is a reasonable proxy, averaging approximately 1,100 square feet per job. The prototype for future commercial development is an average size shopping center (ITE 820), assuming the current average of approximately 700 square feet per job will hold constant over time. For office and other services, a general office (ITE 710) is the prototype for future development.

For the purpose of development fee calculations, TischlerBise excluded construction, non-site based employment, and work-at-home employment from the job data provided by MAG. These types of jobs do not result in any substantial increase in nonresidential floor area.

Figure C10 – 2012 Jobs and Floor Area Estimates

	2012 Jobs (1)		Sq Ft per Job	Floor Area (2)	Jobs per 1000 Sq Ft
Industrial	9,381	11%	1,324	12,420,000	0.76
Commercial (3)	23,106	28%	707	16,342,000	1.41
Institutional (4)	8,392	10%	1,018	8,543,000	0.98
Office & Other Services (5)	41,349	50%	301	12,446,000	3.32
TOTAL	82,228	100%	605	49,751,000	1.65

(1) Jobs in 2012 based on MAG socioeconomic projections (June 2013) for 2010 and 2030.

(2) Costar data (2012) except Institutional and Office & Other Services that were estimated from the number of jobs using national averages for square feet per job from Trip Generation, Institute of Transportation Engineers, 2012.

(3) Retail, Food and Accommodation Services.

(4) Education and Public Administration.

(5) Major sectors are Health Care, Administration & Support (office jobs), and Professional/Scientific/Technical Services.

Figure C11 provides base year data and a ten-year forecast of both jobs and nonresidential floor in the entire planning area. Based on the MAG employment forecast from 2010 to 2030 (June 2013), Glendale expects to become more of an employment center with jobs increasing faster than housing units. In 2013, there were 0.84 jobs for every housing unit in the Glendale MPA. By 2023, the ratio increases to 1.00 jobs per housing unit in the Glendale MPA. Construction, non-site based employment, and work-at-home jobs were excluded to more accurately indicate the increase in nonresidential floor area.

Figure C11 – Glendale MPA Nonresidential Development

Glendale Municipal Planning Area	FY13-14 2013 Base Yr	FY14-15 2014 1	FY15-16 2015 2	FY16-17 2016 3	FY17-18 2017 4	FY18-19 2018 5	FY23-24 2023 10
Jobs by Type of Nonresidential Development							
MPA Jobs - Industrial	9,784	10,215	10,677	11,174	11,710	12,288	16,036
MPA Jobs - Commercial	23,496	23,900	24,319	24,752	25,202	25,668	28,291
MPA Jobs - Institutional	8,559	8,730	8,904	9,081	9,263	9,448	10,434
MPA Jobs - Office/Other	42,336	43,375	44,470	45,625	46,848	48,144	55,995
Total MPA Jobs	84,176	86,220	88,369	90,633	93,022	95,549	110,756
Jobs to Housing Ratio	0.84	0.85	0.86	0.88	0.90	0.91	1.00
MPA Total Nonresidential Floor Area (square feet in thousands)							
Industrial KSF	12,760	13,110	13,480	13,880	14,310	14,770	17,640
Commercial KSF	16,600	16,870	17,150	17,440	17,740	18,050	19,810
Institutional KSF	8,690	8,860	9,020	9,190	9,360	9,520	10,430
Office & Other Services KSF	12,740	13,050	13,370	13,720	14,080	14,470	16,790
Total MPA KSF	50,790	51,890	53,020	54,230	55,490	56,810	64,670
Avg Sq Ft Per Job	603	602	600	598	597	595	584
Avg Jobs per KSF	1.66	1.66	1.67	1.67	1.68	1.68	1.71